Paper
TRADE JOURNAL

JULY 27, 1950

ARE YOU INTERESTED IN NEW FIBER SOURCES?

HOW CAN YOU SOLVE YOUR CORROSION PROBLEMS?

WHAT MAKES AN OUTSTANDING MANUFACTURER OF PRECISION INSTRUMENTS?

WOOD PULP

G

Established 1886

"Look back to derive useful lessons from the past . . . and for the purpose of profiting by experience."
WASHINGTON

Knowledge of the past and acute awareness of the present can be extremely valuable in helping chart the future.

Plan your future woodpulp policies on yesterday's groundwork and today's headwork.

Our organization, by decades of experience, remains keenly aware of current conditions and the opportunities of tomorrow.

GOTTESMAN & COMPANY
— INCORPORATED —
22 EAST 40th STREET • NEW YORK 16, N. Y.
EUROPEAN OFFICES: Birger Jarlsgatan 8, Stockholm, Sweden

Are your Cylinder Moulds MODERN?

Seventy years of experience in construction are back of the MODERN DOWNINGTOWN CYLINDER MOULDS. When you install them in your machine, mould repairs are cut to a minimum. Durability and fine performance are the result of these features:

1 **Monel or stainless-steel rods and windings that end corrosion problems.**

2 **Anti-Friction Bearings that mean free-running moulds and longer felt life.**

3 **Positive-Action Collar Control—maintains constant tension and insures better operation.**

4 **Extra-Rugged Construction.**

If your present moulds need replacing, don't be satisfied with anything but the best—BUY DOWNINGTOWN. On the other hand, if you want more "mileage" from those you have, you can have them modernized at surprisingly low cost. Ask us today, we know we can help you.

DOWNINGTOWN MANUFACTURING COMPANY

DOWNINGTOWN, PA.

Pacific Coast Representative: JOHN V. ROSLUND, Pacific Bldg., Portland 4, Ore.

DESIGNERS AND BUILDERS OF PAPER MAKING MACHINERY SINCE 1880

Have you ever made Glue at your desk?

WE MEAN IT! We'll guarantee that you can make a high-grade liquid adhesive — without moving from that desk of yours! No fuss. No bother. No wasted time. Everything you need is pictured above. Complete with an AQUA-FLAKES mixing kit — yours for the asking!

What's our object?

Just this: We want you to prove *to your own satisfaction* that old-fashioned cold water solubles and cooker type dry adhesives are completely dated. AQUA-FLAKES, a dehydrated liquid dextrin adhesive, gives full control of adhesive quality. We remove the water . . . you simply replace it. And this simple experiment is visible proof that AQUA-FLAKES film beautifully . . . tack fast . . . slash preparation costs!

AQUA-FLAKES have been completely field-tested for heading and wrapping . . . combining . . . laminating . . . and fabricating multi-wall bags. With savings up to 60%! New machinery is available that prepares AQUA-FLAKES solutions *automatically*. In quantity . . . to any viscosity! Mail the coupon, and see for yourself! National Adhesives, 270 Madison Avenue, New York 16, N. Y.

I'LL TRY IT!

Send an AQUA-FLAKES mixing kit to:

Mr. _____

Title _____

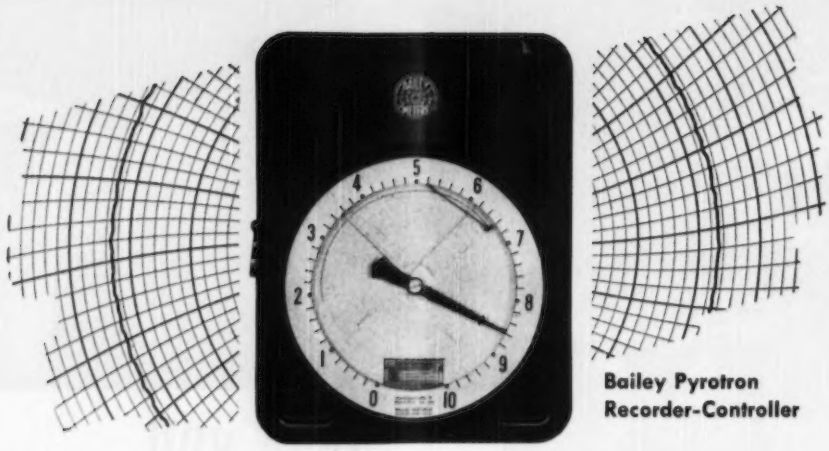
Company _____

Address _____

City _____ Zone ____ State _____

National
ADHESIVES

EVERY TYPE OF ADHESIVE FOR EVERY INDUSTRIAL USE



Bailey Pyrotron
Recorder-Controller

Looking for Better Temperature Instruments?

. . . Then check these features of Pyrotron Electronic Resistance Thermometers . . .

FUNDAMENTAL ACCURACY

Bailey Pyrotron Resistance Elements are made of highest purity platinum—the material used by the National Bureau of Standards in establishing basic standards for temperatures from −190°C to +660°C.

THREE TYPES OF CONTROL

Pyrotron Controllers may operate: on-off electrical systems by either electronic relays or electric contacts, modulated electronic systems, or air-operated systems. Two temperatures may be recorded on the same chart and controlled by a single instrument.

FACTS PUT INTO USABLE FORM

Bailey Pyrotrons may be arranged to put temperature facts into convenient usable forms. If two or more temperatures are related, they may be recorded as continuous records on the same chart for easy comparison. The average of several temperatures or the difference between two temperatures may be recorded as a single continuous record which may be retransmitted to a distant point or used to actuate a control system.

EASY INSTALLATION

Bailey Pyrotrons do not require careful leveling or protection against vibration. Three ordinary copper wires are all that is needed to connect each temperature sensitive element with the recorder. Power may be taken from any 115 volt 60 cycle circuit.

MINIMUM MAINTENANCE

The absence of galvanometers, batteries and standardizing equipment, together with the use of interchangeable unit assemblies, reduces Pyrotron maintenance to the vanishing point.

ABUNDANT POWER

A separate motor drive for each temperature furnishes abundant power to operate a recording pen, a controller and an alarm switch.

For the full story on this unusual electronic resistance thermometer which is suitable for ranges between −300°F and 1200°F, ask for Bulletin No. 230-C. P-21

BAILEY METER COMPANY

1056 IVANHOE ROAD • • • CLEVELAND 10, OHIO

Controls for Processing

TEMPERATURE
PRESSURE
% OXYGEN
% COMBUSTION
FLOW
LEVEL
DENSITY
RATIO

HENRY J. PERRY
Editor

E. P. McGINN
Industrial Editor

Paper
TRADE JOURNAL

R. E. THUEMMES
Managing Editor

E. P. NUTTALL
Associate Editor

PUBLISHED EVERY THURSDAY

LOCKWOOD TRADE JOURNAL CO., INC., 15 West Forty-Seventh Street, New York 19

GEORGE E. LOCKWOOD
President and Treasurer

ARTHUR E. GORDON
Vice-President

FREDERICK E. WINKLER
Secretary

Phone: PLaza 7-2370

VOL. 131 JULY 27, 1950 NO. 4

FEATURES

	Page
Our Congressman Writes	16
Leeds & Northrup—Instruments for the Paper Industry	18
Sericea As A Source Of Paper	22
Corrosion in the Paper Mill	26
Canada's Opinion of Celler Probe	41

DEPARTMENTS

Our Business	7	Canadian Notes	40
Trends	9	Prices	42
News of the Week	11	Materials	43
Industrial Section	18	Imports	44
Patent Abstracts	29	New Equipment	44
Associations	34	New Literature	45
Forestry	34	Obituaries	46
Suppliers	37	Production Ratio Report	46
Financial Record	39	Classified Advertising	48
		Index to Advertisers	58

DATES TO REMEMBER

SEPTEMBER 5-9: Sixth National Chemical Exposition, Chicago Section, American Chemical Society, Chicago Coliseum, Chicago, Ill.

SEPTEMBER 11-23: 6th Educational Graphic Arts Exposition, International Amphitheatre, Chicago, Ill.

SEPTEMBER 14-16: Southern Paper Trade Assn., Sheraton Plaza Hotel, Daytona Beach, Florida.

SEPTEMBER 14-17: American Pulp & Paper Mills Supts. (New York-Canadian Div.) Convention, Chateau Laurier Hotel, Ottawa, Ont., Canada.

OCTOBER 2-5: Fifth Engineering Conference of the Pulp and Paper Industry, Netherland Plaza Hotel, Cincinnati, Ohio.

OCTOBER 12-14: American Pulp & Paper Mills Supts. (Southern and Southeastern Div.) Annual Meeting, George Vanderbilt Hotel, Asheville, N. C.

OCTOBER 16-20: 38th Safety Congress and Exposition, Chicago, Ill.

OCTOBER 23-25: National Paper Trade Assn., Fall Convention, Stevens Hotel, Chicago, Ill.

OCTOBER 30-31 NOVEMBER 1: 37th National Foreign Trade Convention, The Waldorf-Astoria, New York, N. Y.

NOVEMBER 27:—DECEMBER 2: 19th National Exposition of Power and Mechanical Engineering, Grand Central Palace, N. Y.

DECEMBER 3-6: American Institute of Chemical Engineers, Annual Meeting, Neal House, Columbus, Ohio.

THIS WEEK

Lespedezia— A possible source of papermaking fiber that apparently has tremendous value as a cover crop and soil builder.

Valuable information on paper mill corrosion problems is contained in the third article of our Anti-Corrosion series entitled "Corrosion in the Paper Mill" by J. S. Overbagh and W. H. Birchard.

The story of pioneering in instrument making. Leeds & Northrup, makers of instruments for the Paper Industry.

NEXT WEEK

Some Chemical Developments for the Paper Industry by R. W. Kingerley.

Development of Anti-Friction Bearing Paper Machine Dryers by E. S. Skinner.

Effect of the Moisture Content of Wood on the Groundwood Pulping of White Spruce and Quaking Aspen by E. R. Schafer and Axel Hyttinen.

Subscriptions

Payable in advance.

Single Copy 15c

U. S. $5.00 per year

U. S. Possessions $7.00 per year

Canada $7.00 per year—Canadian Funds acceptable

Latin American Countries $15.00 per year

All Other Countries $20.00 per year

Entered as Second Class matter at the post office at East Stroudsburg, Pa., under Act of Congress of March 3, 1879. Publication Office at Lockwood Trade Journal Co., Inc., 34 N. Crystal St., East Stroudsburg, Pa. Printed in U.S.A. Copyright 1950 by Lockwood Trade Journal Co., Inc. PAPER established Feb. 17, 1899, combined with PAPER TRADE JOURNAL, Nov. 16, 1899. PAPER established Sept. 21, 1919, combined with PAPER TRADE JOURNAL, February 19, 1926. All rights to the above titles reserved. Contents of PAPER TRADE JOURNAL, including all articles, illustrations, etc., are copyrighted and may not be reprinted except by permission. PAPER TRADE JOURNAL is indexed in Industrial Arts Index and Engineering Index. Also publisher LOCKWOOD'S Annual DIRECTORY OF THE PAPER AND ALLIED TRADES.

SIDE-DRIVE HYDRAPULPER

FOR THOSE "IMPOSSIBLE" LOCATIONS

The new side-drive, low head Hydrapulper shown above, a product of The Cowles Company, Cayuga, N. Y., completes the Shartle Hydrapulper line.

There is much to be said in favor of this new side-drive unit because there are many mill situations where its selection is definitely indicated.

It requires little floor area.

It requires little head room.

It may have a V-belt or direct motor connected drive.

It is as easy to install as a beater.

It sets low enough to be charged from the floor, like with a beater.

It will operate continuously or on a batch basis.

It will handle batches of from ⅓ tub full to full tub charge.

It does a fast, thorough slushing job on virgin pulps, old papers, paper cuttings and all kinds of broke.

It has tremendous capacity as a mixer of color or other chemicals and is low enough in cost to operate as a mixer, from both cost and operational standpoints.

A point particularly worth emphasizing—complete drain out when dumping—no fag ends of the furnish left in the unit.

Available in capacities ranging from 500 lbs. to 5,000 lbs.

Installation cost very low.

This new side-drive Hydrapulper, like the vertical units of which close to 600 are in service, will be built and placed in operation by the same dependable engineers that have handled all those earlier installations.

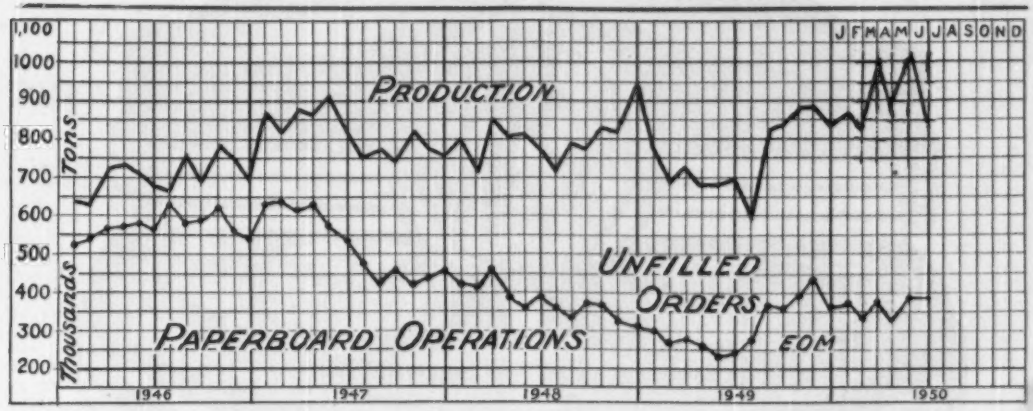
For full particulars on construction capacities, etc., write Shartle.

SHARTLE BROS. MACHINE CO.
MIDDLETOWN, OHIO

DILTS MACHINE WORKS, Fulton, New York — Divisions of THE BLACK-CLAWSON COMPANY, Hamilton, Ohio
Western Sales Office: Mayer Bldg., Portland, Oregon
Associate: ALEXANDER FLECK LTD., Ottawa, Canada — Associate: THE COWLES COMPANY, Inc., Cayuga, New York
Subsidiary: B-C INTERNATIONAL, LTD., 16 Catherine Place, Victoria, London S. W. 1, England

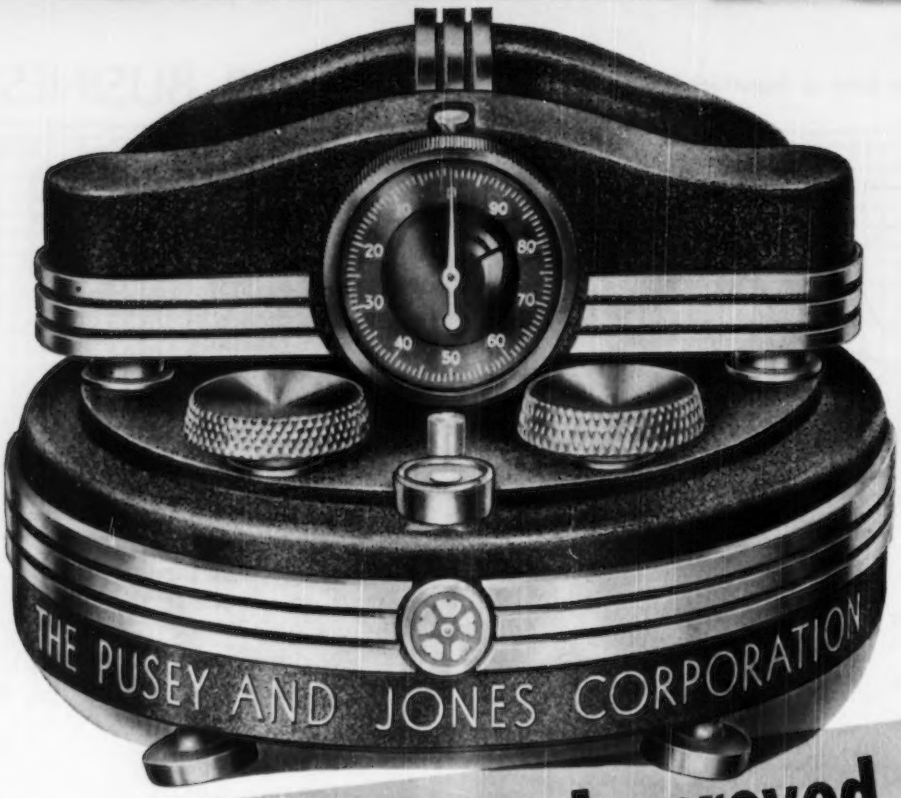
Weekly Brief of Important Figures

OUR BUSINESS



Source		WEEK ENDING July 15, '50	June 17, '50	July 16, '49
APPA	Paper Production percent 6-day Capacity	99.3	102.5	76.0
	Unbl. Kraft Paper Production percent	89.1	97.6	62.9
NPA	Paperboard Operating Ratio percent inch hours	82.0	93.0	64.0
		June 1950	**May 1950**	**June 1949**
APPA	Paper Production* (Except Newsprint and Building Papers) ..... Tons	788,500	842,500	631,906
	New Orders ..... Tons	812,800	836,000	637,622
	Unfilled Orders ..... Tons	565,565	835,065	343,370
	Shipments ..... Tons	786,300	842,000	626,312
		June 1950	**May 1950‡**	**June 1949**
NPA	Paperboard Production ..... Tons	846,030	1,031,369	696,800
	New Orders ..... Tons	855,016	1,091,175	692,000
	Unfilled Orders ..... Tons	394,110	395,483	243,300
	Our Customers Activities Index[1]	**Latest Mo.°**	**Previous Mo.°**	**Year Ago°**
FRS	Manufactures Total Index	197	191	183
	Durable Mfg. Index	222	210	212
	Nondurable Mfg. Index	177	176	159
	Chemical Products Index	252	250	239
	Mfg. Food Products Index	148	148	148
	Printing and Publishing Index	175	172	157
ODC	Magazine Advg.-Printer's Ink Index	327	328	346
	Retail Sales Combined Adjusted Index	309.6	308.1	304.5
	Drug Index	221.2	221.3	229.8
	General Merchandise Group Index	293.3	291.8	288.3
	Grocery and Combination Index	378.6	377.3	366.3
	Prices Index			
BLS	Consumers Price Index[1]	167.3	167.0	169.7
	Wholesale all Commodities[2]	152.9	152.7	156.9
	Wholesale Foods[2]	155.3	155.5	162.9
	Commodities other than Farm Products and Foods[2]	146.4	146.1	148.9
	Wholesale Pulp and Paper[2]	155.4	155.5	165.1
	Purchasing Power of Dollar, Consumers Prices[1]	59.8	59.9	58.9
	General Activity Index			
FRS	Mfg. Production-Worker Payroll	333.5	329.9	319.2
	Unemployment Compensation Initial Claims (M)	1,543	1,294	1,800
	Miscellaneous Carloadings–Thousands of Cars	1,434	1,688	1,381
	Electric Output (Million KW hr.)	30,191	31,864	27,745
PTJ	Average 32 P & P Common Stocks as of July 18	$29.92	$34.05	$25.66
	Average Indicated Dividends Common Stocks as of July 18	$ 2.32	$ 2.32	$ 2.17

[1] 1935-39=100 Unadjusted Index
[2] 1926=100
° For details see APPA Monthly Statistical Summary—May 1950 Estimated Figures
* Latest Month Available on Request
‡ For Five Weeks



Now . . . A New, Improved *Plastometer*

For measuring hardness of rubber-covered rolls

Puseyjones has developed a new improved streamlined Plastometer for wider use in the Paper and Rubber Industry, replacing the original instrument that served the Industry for the past 40 years. Now it is possible to measure the plasticity of rubber-covered lower press rolls while the roll is still in position on the machine. The new Plastometer is only *4 inches high* as shown above in actual size as compared with the 16-inch height of the older design. Several major design improvements are incorporated in the new Plastometer. It is compact, lighter in weight and easier to operate. Replace your old instrument with this more practical and modern type.

THE PUSEY AND JONES CORPORATION

Established 1848. Builders of Paper-Making Machinery

Wilmington 99, Delaware, U.S.A.

THE SIGN OF TRADE MARK SUPERIOR QUALITY

Paper TRADE JOURNAL

TRENDS

Office of the PAPER TRADE JOURNAL,
Wednesday, July 26, 1950

Any report on the various segments of the industry's markets can at best be an attempt at coverage. The market is shaken by what merchants and mills alike describe as stupid and hysterical buying born of confusion and propaganda. Conditions vary daily by mills, as by the eleven associated parts of the pulp and paper industry.

Though an overall picture is difficult, it can be said that while deeply troubled by reports from Korea, and confused by Washington plans for full defense, the sound citizens who make up the U. S. paper and paperboard industry are hopeful that the buying panic will burn itself out shortly and things settle to the normal problems of production and competition.

At press time, it looked as though the statesmen at Lake Success were pitted against the politicians at Washington for the public ear, with Congress in the lead. Thinking is so much quieter than excited speech.

At so serious a time, a sense of humor is hard to keep. And, as Bobby Burns put it, the power to see ourselves as others see us is lacking.

Boxboards Rise Again

Reflecting the growing strength of boxboard demand, prices of these grades were lifted in the New York area by $5 a ton during the week, effective at once.

Production on set-up boards had lagged until mid-June. It will be noted from the Table that May figures fell behind April's by nearly 1800 tons, and that, compared with the low volume of May, 1949, the gain was but 12 percent. Total paperboard gains for May, 1950, show a gain of 35 percent over May, 1949, and folding boxboards a rise of 21 percent.

Pickup in this grade covered Christmas buying and the longed-for cut in excise taxes. All grades are now hit by the fire of war talk, and this market is confused. The mills report that they can book no further orders and will have to go on an allotment basis shortly, should the condition continue.

Rag Content Prices Up

Most mills have advanced their prices of rag content ledgers and bonds. Percentages of increase vary by grades and mills from about 4 to 10 percent. The apparent range of new prices will be reported on "Prices" page. As yet, price coverage is only partial.

It is reported that some fine paper mills have begun to allot tonnages to their distributors. Current backlogs are sizable, and new orders will be accepted on an allotment basis.

PAPERBOARD PRODUCTION, BY TYPE, MAY, 1950

(Tons of 2,000 lbs.)

	May 1950	April 1950	May 1949
Paperboard, total	906,236	837,425	673,315
Liners	308,438	278,978	220,069
Corrugating material	140,413	127,709	94,656
Container chip and filler board	26,294	23,021	20,659
Folding boxboard (for use in folding box plants only)	191,023	180,491	157,608
Set-up boxboard (for use in set-up box plants only)	49,953	51,745	43,608
Cardboard	6,843	7,239	6,890
All other paperboard	183,272	168,242	129,825

Source: Bureau of the Census.

Unbleached Kraft Papers

So far as can be uncovered, only one new price has been announced on kraft wrapping paper and bag stock. An advance of one-quarter of a cent is involved, and price is effective with August 1 shipments.

Other mills have withdrawn price-lists and shipments are billed at price prevailing. Advances of $10 to $20 a ton are involved. The market is too confused for sane reports. Shipments are already on an allotment basis.

Grocery bags also are up about $10, but little information is to be had.

Materials

Casein.—Demand shows strength, and supply is short on domestic and imported grades. European offers are small and priced upwards. Premium domestic is also higher. Argentine market is particularly strong with price lifted 3c a pound.

Rosin.—The climb on rosin grades was halted close to the figure CCC is asking for its loan stock. GHIK grades were lower by 21c at press time.

Twines.—A leading producer of soft fiber twines has advanced prices 2c per pound, effective July 14. Though papermakers' twines were not included, prices are subject to change or withdrawal without notice.

Containers and Packaging* First Quarter, 1950

Local Trends and Conditions

PART II

New England Area—After a slow start in January, demand for paper and paperboard containers picked up considerably during February and March. Business for the quarter, however, was from 5 to 7 percent off for the same period in 1949. Most industry members feel moderately optimistic for the second quarter.

Folding box volume was good throughout the period. This segment of the industry reports better than average sales for the quarter. One manufacturer reported the best quarter in the firm's history. Despite the foregoing, there are some indications of a falling off in volume during the coming months. Buying is generally for short delivery with prices at rock bottom. Raw materials are in good supply.

Set-up box plants report a 6 percent drop in shipments for the first quarter as compared with the first quarter of 1949. Inventories are low and prices stable. Deliveries of quality board are slow, according to some in the trade.

Source O.D.C.

Demand and shipments for corrugated and solid fibre shipping containers held up well during the quarter with prices at a low level. Supplies of raw materials are considered adequate to meet demands for quick or rush delivery. Members of the industry anticipate a drop in volume during the coming quarter, although business will still be at levels called "good."

North Central States Area—Corrugated and solid fibre shipping container demand was reported up throughout the area. Nevertheless competition was very keen with some reports of price "snipping" by competitors. Profits, it was stated, cannot help but be seriously affected if the price "snipping" continues, as labor and material costs have not been reduced and have actually risen in some instances. Since sales volume during the first quarter was generally higher than the previous quarter and a year ago, the prospects are favorable for continued activity at a high level during the second quarter.

Production and sales of folding paper boxes during the first quarter varied considerably by company with the consensus indicating that business was at least equal to a year ago, probably much higher in some instances. On the other hand, the majority of set-up box producers reported business down sharply from the fourth quarter, with what appeared to be a greater than seasonal slump. Materials of all kinds, with the exception of cellophane for window inserts, were reported in plentiful supply. Competition is stiff in the paper box field and some price reductions were reported during the first quarter, although for the most part, prices appear to have been relatively stable. Outlook for folding boxes was good, but set-up box demand was expected to be spotty until Christmas buying begins.

Fibre can and tube output held up very well during the first quarter, most producers stated. Present orders on hand indicate that the second quarter may be at least equally good. Materials appear plentiful and firm in price.

Paperboard Production (Tons)*

	July 15 1950	July 8 1950	July 16 1949
Production	186,959	129,356	137,034
New Orders	188,355	226,087	145,799
Unfilled Orders	489,490	491,744	282,174

Source: NPA.

Important FACTS ABOUT pH for PAPER MILL OPERATORS

WHETHER YOUR mill operations are large or small, one of the most important advancements you can make is the installation of BECKMAN pH CONTROL. Through accurate pH control you can make *many* vital savings . . . savings that will quickly pay for the installation and will *continue* paying big dividends throughout the years by stepping up plant efficiency, reducing waste and cutting costly maintenance. For example . . .

- Beckman pH Control is used to insure more uniform pre-conditioning of plant water and substantial savings in chemicals.
- Many kraft mills insure cleaner pulp by checking the efficiency of the washers with Beckman pH Control.
- By Beckman-controlling the pH of the furnish or white water, proper freeness is assured at lowest chemical cost and minimum corrosion of costly wire.
- In making sized sheet and paper board, the set of the size is also critically dependent upon accurate pH control.
- Beckman pH Control is also used to insure better printing qualities of the finished paper—its ability to take ink, its whiteness, its strength and its color stability.

. . . and many other important savings in modern pulp and paper mill operations.
Write for full details.

BUT TO MAKE CERTAIN you get the latest, most convenient and most accurate pH equipment available, *be sure to specify* "BECKMAN" . . .

Beckman pH equipment is completely electrometric, eliminating the mess and inaccuracies of colorimetric methods. Simply press a button and the exact pH of any process is instantly shown on a large easily-read dial. *It is the simplest of all pH methods!*

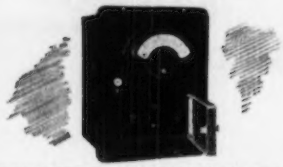
The accuracy of Beckman pH readings is completely unaffected by human errors in color judgment, by turbidity, oxidizing or reducing agents, by suspended materials, colored process solutions or other variables that affect outmoded colorimetric methods. *Beckman pH readings are universally accurate and dependable!*

With Beckman equipment no time-wasting or troublesome sampling devices are needed. Beckman pH electrodes may be installed directly in vats, tanks, channels or flow lines—and exact pH values read instantly—and continuously, if desired—on the process fluids themselves.

Unique rugged-type Beckman Electrodes, specially designed for direct immersion in abrasive or suspension-laden fluids, reduce maintenance to an absolute minimum. *Beckman is the most trouble-free of all pH equipment!*

The above are only a few of many Beckman advantages. Write for the complete story.

THERE'S A BECKMAN pH INSTRUMENT FOR EVERY NEED



COMPLETELY AUTOMATIC! The Beckman Model R instrument operates directly from standard 110 v. A.C. lines to provide completely automatic pH indication. Also provides for completely automatic pH recording and automatic process control. Can be installed to give accurate pH readings from various stations in plant through one instrument. *This is the pH unit being installed by today's most modern plants, large and small.*

PORTABLE A.C. OPERATION! The Beckman Model H instrument can be quickly moved from one part of the plant to another and plugs directly into standard 110 v. 50/60 cycle A.C. current. Compact, convenient and extremely simple to operate, the Model H gives instant pH readings on an easily-read dial. It is widely used both for manual pH control of small plants and as an auxiliary instrument on completely automatic pH installations.

COMPLETELY SELF-CONTAINED! The Beckman Model M is the ideal pH instrument where complete portability is desired. Operating from its own self-contained, long-life power supply, the Model M can be used *anywhere* in the plant or field, whether convenient to power lines or not. Features the same accuracy, simplicity and operating speed as the Model H, and is also widely used both for manual pH control of small plants and as auxiliary equipment on large automatic installations.

Write for literature on Beckman pH Equipment!

BRING YOUR pH PROBLEM TO US. Our trained engineers will gladly study your problem and recommend the equipment best suited to your particular requirements. No obligation, of course.

BECKMAN INSTRUMENTS, INC., South Pasadena 16, California
FACTORY SERVICE BRANCHES: NEW YORK • CHICAGO • LOS ANGELES

BECKMAN INSTRUMENTS CONTROL MODERN INDUSTRIES

News of the Week

Paper TRADE JOURNAL

Lee To Add Third Machine

VICKSBURG, Mich. — Groundbreaking ceremonies for a new $1 million addition to the Lee Paper Co. were held July 18.

The addition will house a new paper making machine, third to be installed at the company since 1907 and the first to be installed at any mill producing fine papers since 1923. The building, being constructed by the Miller-Davis Co. of Kalamazoo, will be completed in November.

The Beloit Iron Works, Beloit, Wis., will build the new machine under the supervision of Lee Paper Co. officials. The machinery is expected to be ready to use by June 1, 1951.

While only one new machine will be installed in the building at present, the structure is large enough to hold two paper machines with company plans calling for another machine installation within the next 10 years.

Further Expansion At Chemical

HOLYOKE, Mass.—An expansion program at the Chemical Paper Mfg. Co., including a new building and considerable new machinery has been announced.

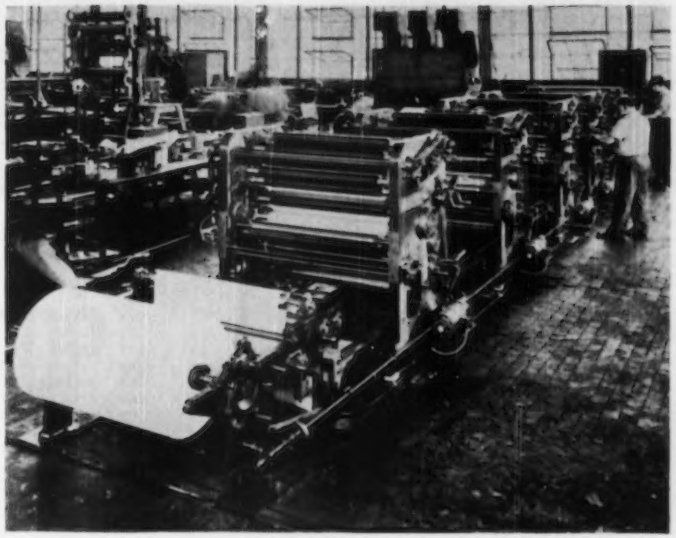
An addition to the finishing plant has been started by P. J. Kennedy & Co. It will be a one-story structure 45 by 120 feet with a basement, and will be built of steel, brick and concrete. Elmer C. Tucker, vice-president of Chemical Paper Mfg. Co., says the plans call for occupancy by October, at which time the new machinery, ordered six months ago, will be here. The estimated cost of this development program is set at $50,000.

This finishing room addition is the second major portion of the 1950 building program at Chemical. The $30,000 addition to the filter plant has recently been finished. Daniel O'Connell's Sons, Inc., had the contract. The improvement adds 33 percent to the company's filter capacity.

Rushmore Closes

GOUVERNEUR, N. Y.—The Rushmore Paper Mills, Inc., announced July 22 that it would immediately close its strike-bound plants here and at Natural Dam.

A company spokesman said he had received telegraphed instructions from James S. Wemyss, the owner. The instructions were based on action taken by the board of directors' meeting at Groveton, N. H., on July 22. Mr. Wemyss also has an interest in a paper mill at Groveton.



Workmen assemble a 4-color ATF-Webendorfer open web offset press which will operate commercially on a color job throughout the September 11-23 Chicago Graphic Arts Exposition. Operation will be by Schultz Lithographing Co., new owner of the press, and ATF is providing a special gallery around the machine so show visitors can get a close look at all details.

The order was to lay off all supervisory and sales and office personnel and to shut down the plant "until such time as a reasonable labor contract can be determined."

Sawgrass Paper?

JACKSONVILLE, Fla. — For twenty years or more various experiments have been conducted in Florida in an effort to determine the commercial feasibility of making paper out of some of the fibrous plants which grow wild throughout the State. None of these so far has resulted successfully, according to the Florida State Chamber of Commerce. However, the idea has not been given up.

The latest to make the attempt is Carl L. Sackett of Leesburg, Fla., who has just been granted a four-year exclusive lease to cut sawgrass on all state-owned lands. From this saw grass, which grows abundantly in Florida swamps and lowlands, Mr. Sackett will endeavor to make paper on a commercial basis.

Under the terms of the lease he will pay no fee for four years, but is required to build a paper mill within that period. If his plans are successful, he will be given an extension of the lease for 50 years and will pay rental of 50 cents an acre for the first 30 years and $1 an acre for the subsequent 20 years.

Plan Pakistan Mill

Pakistan may provide a market for millions of dollars worth of papermaking machinery and equipment in the next few years, according to the Hon. Mohammed Ali, Pakistan High Commissioner to Canada. In Vancouver, B. C., recently, he revealed that plans were underway for a big paper mill in his country. He said representatives of an eastern firm were now returning from making an extensive survey in this connection and that his government had accepted their blueprint for the paper plant.

The plant would make no newsprint, which would rule out imports of pulp from Canada. Various other types of paper are planned, to be made from native timber and bamboo in Pakistan, Mr. Ali said.

Canada's Labor-Management Relations

OTTAWA—No time was lost through labor disputes in the pulp and paper products manufacturing industries throughout Canada during May this year, though 23,900 man-working days were lost by such disputes in all industries during the same period.

JUNE NEWSPRINT REPORT

NEWSPRINT ASSOCIATION OF CANADA, MONTREAL

I. PRODUCTION AND SHIPMENTS in short tons:	2000 pounds.	JUNE 1950	JUNE 1949	JUNE Percent Change	YEAR TO DATE 1950	YEAR TO DATE 1949	YEAR TO DATE Percent Change
1. Canadian Production: including Newfoundland	month and year to date	440,967	437,043	+ .9	2,591,571	2,605,550	— .5
	per working day	17,225	17,006	+ 1.3	16,894	16,963	— .4
	percent of capacity	101.2	102.4		99.2	102.2	
2. Canadian Shipments: including Newfoundland	to United States	391,239	371,941	+ 5.2	2,307,433	2,148,051	+ 7.4
	to Canadian Consumers	29,046	29,315	— .9	173,495	166,275	+ 4.3
	to Other Markets	20,492	46,705	—56.1	71,876	236,546	—69.6
	total: all Markets	440,777	447,961	— 1.6	2,552,804	2,550,872	+ .1
3. U.S. Production:	month and year to date	88,420	80,417	+10.0	484,648	458,432	+ 5.7
4. U.S. Shipments:	to U.S. Consumers	87,499	77,455	+13.0	478,957	447,830	+ 7.0
	to Other Markets	2,429	1,005	+141.7	8,431	6,457	+30.6
	total: all Markets	89,928	78,460	+14.6	487,388	454,287	+ 7.3
5. U.S. Imports from Europe:	*estimate; see Table 8.	*17,100	17,177	— .5	*87,943	147,326	—40.3

II. CONSUMPTION AND STOCKS in short tons:	2000 pounds.	JUNE 1950	JUNE 1949	JUNE Percent Change	YEAR TO DATE 1950	YEAR TO DATE 1949	YEAR TO DATE Percent Change
6. U.S. Consumption:	estimated total	488,938	454,473	+ 7.6	2,931,663	2,752,483	+ 6.5
7. North American Stocks:	U.S. Consumers	551,477	610,081	— 9.6	551,477	610,081	— 9.6
	Canadian Mills	159,957	163,873	— 2.4	159,957	163,873	— 2.4
	U.S. Mills	8,074	13,091	—38.3	8,074	13,091	—38.3
	estimated total	719,508	787,045	— 8.6	719,508	787,045	— 8.6
8. A.N.P.A. Report: 525 Newspapers	Consumption	376,482	349,944	+ 7.6	2,257,380	2,119,412	+ 6.5
	Stocks (tons)	382,459	460,735	—17.0	382,459	460,735	—17.0
	Stocks (days)	30	39		30	39	

Burrows Paper To Control Mohawk

LITTLE FALLS, N.Y.—With the resignation and retirement of Mr. and Mrs. Charles H. Burrows from the active management of Mohawk Valley Paper Corp., Mr. and Mrs. Ralph Burrows were elected to fill the vacancies. Ralph Burrows also succeeds his uncle Charles to the presidency, thus becoming president of both Mohawk and the Burrows Paper Corp.

The new president feels that the acquisition of Mohawk will give higher efficiency and better service even though there is no actual merger. There will be no change in managements or policies which have been so successful under the elder Burrows.

Doeskins' Declined Contract

NORTHAMPTON, Mass.—George Haberstro, general manager of Mt. Tom Div., Doeskin Products Co., said the company's proposed contract which brought about a walkout of 150 workers early this week, would "create additional employment and assure more constant employment."

He claimed the contract offered by the company is "fair and equitable. . . . The contract clearly outlines the rights and responsibilities of the employe and the management, and clearly sets forth . . . the provisions, thereby leaving less room for the possibility of disputes arising with regard to its meaning or interpretation."

While the union has asked a 15 percent pay increase, Haberstro said the rejected contract offered a five cents an hour wage increase and "payment by the company of 75 percent of the premiums of an insurance program paralleling . . . the plan which is in operation in our Wheelwright Division."

He stated the company has also offered an additional paid holiday for a total of seven; double time payment for all work on any of the seven holidays in addition to holiday pay; adjustments in the base rates of several classifications, establishment of two new job classifications in internal digester repair work, and three weeks' vacation for 15-year employes.

The union's objection to the contract, which it called "unreasonable demands," was because of the clause calling for a seven-day work week. Mr. Haberstro said, "The nature of a pulp mill is such that in order to operate the mill economically and efficiently, it is necessary to run the mill on a continuous seven-day basis."

He revealed that the company had agreed that staggered shifts would not be established "solely for the purpose of eliminating the possibility of employes' working the sixth work day in their work week. In connection with this program the company has offered time and a half for work performed on Saturday and double time for Sunday."

Mr. Haberstro said the proposed schedule would "produce a higher quality product, increase the efficiency of operations," and create additional employment.

Hanson Heads Champion-International

LAWRENCE, Mass. — The election of Kurtz M. Hanson as president of the Champion-International Co. has been announced.

Mr. Hanson, who has been an executive consultant for some time in the management of the paper manufacturing company, succeeds A. Murray Howe, the retiring president. Mr. Howe resigned as head of the company, ending more than 30 years' service in its employ.

Other officers elected were: Thomas W. McKnew, first vice-president; Sheldon E. Wardwell, vice-president, assistant treasurer and clerk; Joseph F. Raichlen, vice-president (sales); Norman I. Bearse, vice-president (production); and Roland B. Hammond, treasurer.

The board of directors is as follows: John Oliver La Gorce, chairman; Mr. McKnew, vice-chairman; Mr. Bearse, Robert V. Fleming, M. B. Grosvenor, Roland B. Hammond, Elisha Hanson, Kurtz M. Hanson, Mr. Raichlen, Arthur Sweeney, and Mr. Wardwell. Messers Bearse, Fleming and Raichlen are new members of the board.

One of the larger coated-paper mills in New England, Champion-International Co., specializes in the production of high grades of coated stock. For more than a quarter of a century it has supplied the heavy coated stock used by the National Geographic Magazine.

Technical Aid For Austria

NEW YORK — At the invitation of ECA, three U. S. paper mill executives will suggest means of developing production in Austria's pulp and paper mills. K. O. Elderkin, manager of Crossett Paper Mills, Crossett, Ark., Dr. James J. Harrison, research director, Michigan Carton Co., Battle Creek, Mich., and Vance P. Edwardes, consulting engineer, Palmer, N. Y., left a week ago to act as advisors to Joseph E. Atchison, Chief, Pulp and Paper Section, Industry Division, E.C.A. The group expects to return to this country during the third week in August.

Weyerhaeuser Steamship Line

SAN FRANCISCO, Calif. — Plans for the operation of an intercoastal lumber and general cargo service, beginning August 1, with its own personnel and six ships were announced by the Weyerhaeuser Steamship Co. It recently bought the Pacific Coast Direct Line of Newark, N. J., and is opening its own West Coast offices with headquarters in this city.

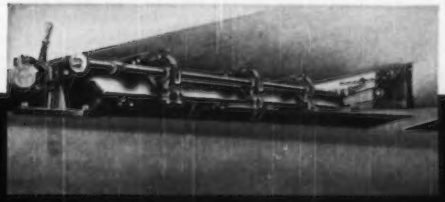
A spokesman said the company would have sailing every two weeks from coast to coast, moving lumber and wood products eastbound and general cargo westbound. Calls are to be made at Newark, Chester, Pa., Philadelphia, Baltimore, Norfolk, Los Angeles, San Francisco, Oakland, Alameda, Portland, Seattle and Tacoma.

Don't Let Dirty, Unconditioned Press Felts Put A STOP Sign on Your Paper Machine...

Nowadays, there's no excuse for mid-week shutdowns to wash clogged felts. The faster machines are operated the greater the production loss from needless shutdowns.

Vickery Felt Conditioners have kept pace with faster felt travel and the increasing need for continuous and continuously efficient felt operation. They keep the felts in shape to absorb the maximum amount of water at the presses, thus speeding dryer operation as well as saving steam. Paper finish is more uniform, too.

You need continuous conditioning for every press felt. Ask us for layouts and estimates.



BIRD MACHINE COMPANY
SOUTH WALPOLE · MASSACHUSETTS

THE VICKERY FELT CONDITIONER

CHARLES O. RADER

D. P. ABERCROMBIE

Brightwater Paper Names Rader

NEW YORK — The appointment of Charles O. Rader of Bridgeport, Conn., as general sales manager, and Daniel P. Abererombie, Jr. of Darien, Conn., as Eastern sales manager, of the Brightwater Paper Co., Adams, Mass., was announced July 21 by Henry J. Guild, president of the company. Both men will make their headquarters at the Brightwater offices, 11 West 42nd street, New York.

Customs Court Trials

NEW YORK—Several cases have been at least partially tried recently in the United States Customs Court with the Import Committee of the American Paper Industry providing witnesses to support the advances in duty assessed by various examiners, according to a report issued by Warren B. Bullock, manager of the committee. A mixture of groundwood and unbleached chemical pulp, 50 percent of each, was classified for duty as an unenumerated manufactured material, and not duty free as pulp as claimed by the importer; Finnish wallboard, classified at Cincinnati as a processed paperboard, but claimed to be dutiable at the lower rate for plain wallboard, originally partially tried at Cincinnati, but transferred to Philadelphia, has been closed with hearings at New York; railroad writing for railroad waybills, claimed to be dutiable at the rate for printing paper, partially tried at Nashville, will be completed at New York; waste material, including material quantities of rayon clips, claimed to be duty free as paper stock, held by Customs officials to be dutiable on the basis that rayon can not be effectively used in the making of paper.

New cases brought before the Court include the following: Four shipments of Japanese insulating and similar tissues assessed for duty by the inclusion of Japanese inland freight in the dutiable value; one shipment of French paper and one of English, classified for duty as handmade paper at 1½ cents per pound and 7½ percent, claimed to be dutiable as drawing paper at 1 cent per pound and 5 percent; European filtering paper classified as filtering paper at 5 cents per pound and 15 percent is claimed by the importer to be dutiable as paper cut into shape at 15 percent; English paper napkins classified for duty as manufactures of paper, claimed to be dutiable at the lower rate for paper cut into shape.

An importer of corrugated board laminated to a base with asphalt has abandoned his claim that the material is dutiable at 30 percent as paper not specially provided for, though assessed for duty at 35 percent as a manufacture of paperboard.

Asks Reorganization Of Mobile Paper

MOBILE, Ala.—A group of creditors of the Mobile Paper Mill Co. petitioned federal court for authority to reorganize the firm under the bankruptcy act, it was learned July 14.

The Reconstruction Finance Corp. is preparing to foreclose on mortgages totaling $808,000, and has scheduled the properties for public sale July 21. If the reorganization petition is granted the sale would be postponed.

Liabilities of the company exclusive of capital stock were listed at $1,529,011, and assets at $2,481,019.

The company manufactures paperboard and other paper products, and employs about 400.

Southern Kraft Boosts Wages

MOBILE, Ala.—Some 10,000 Southern paper mill workers received wage increases ranging from seven to 10 cents an hour under new contracts announced July 7 by International Paper Co.

The one-year agreements with five AFL unions cover workers in eight mills in International's Southern Kraft Division.

The plants are located at Mobile, Moss Point, Miss.; Panama City, Fla.; Georgetown, S.C.; Camden, Ark.; Spring Hill, La., and two plants at Bastrop, La.

The agreements, effective last June 1 also provided liberalized vacation and pension plans.

The wage hike boosted the minimum hourly pay rate from $1.05 to $1.12 an hour, and increased the top rate from $2.35 to $2.45.

At a recent convention in Mobile, a council of AFL paper workers unions voted to seek a 15-cent an hour across the board increase in all Southern mills.

Under the new pension plan, retired workers will get $100 a month including social security. Company contributions were increased under the mutual plan, while employe contributions were unchanged.

Plan Fuel Charge Study

WASHINGTON, D. C. — Legislation looking to broad new studies of fuel charges and costs is given a more favorable prospect as Congress prepares to stay in Washington later this summer.

Spurred by White House interest, the Senate Interior Affairs Committee, of which Senator O'Mahoney is chairman, has picked up five bills bearing on this subject. These are a bill to create a bi-partisan coal commission (Senate Joint Resolution 157); two bills establishing a coal study commission (Senate bills 3215 and 3383); authorization for Senate investigation of petroleum fuels (Senate bill 6) and a bill generally expected to get priority over the others, Senate Resolution 239, which appears to have Administration backing, inasmuch as Secretary of Interior Chapman has strongly endorsed it.

S. 239 is a broader measure than the others, authorizing a Senate inquiry into all fuels, including hydroelectric power. The committee is reportedly more interested in this bill, also, possibly because the chairman is reported to feel that the relationship of various fuels and hydro power is so close that only an over-all study would produce results.

Electric power generation now is at the rate of 362 billion kwh. per year, almost 70 billion above the war peak. The effects of the new war production program cannot be gauged at this date, but as contrasted with the War II period, this country is producing war materials primarily for its own rearmament, and not for the rest of the world also, which may make a difference in demand.

New Drier Rolls For St. Croix

WOODLAND, Maine—St. Croix Paper Co. will install 47 jacketed steel drier rolls on two fourdrinier machines in its Woodland, Maine, newsprint plant, according to announcement by Harry L. Hayes, vice-president and general manager (Woodland). The jacketed rolls, to be supplied by Lukenweld, division of Lukens Steel Co., Coatesville, Pa., will replace driers of another type of construction.

Order Constant Temperature Unit

West Virginia Pulp & Paper Co., Charleston, S. C., is one of the latest mills to order one of the Ross Engineering Constant Temperature and Humidity Room units.

MILL EXPERIENCE PROVES IT!

SANTOBRITE controls microorganisms . . . effectively, economically

Santobrite (Monsanto's sodium pentachlorophenate, technical) long has been a potent foe of microorganisms that plague the paper industry. It is the *economical* way to prevent losses caused by microorganism damage such as slime spots, breaks, blinded wires, plugged and rotted felts, obstructed stock and water lines and stock losses.

Santobrite is easy to apply, requiring no special equipment. It is chemically stable, noncorrosive to metals, nonvolatile and comparatively odorless. Properly handled, Santobrite is harmless to employees and to users of your mill's products. Santobrite is available as powder, pellets and briquettes, giving you a choice of forms best suited to specific problems in your mill.

Mail the coupon . . . or contact the nearest Monsanto Sales Office . . . for your copy of Technical Bulletin No. O-5, "*Santobrite for Microorganism Control in the Pulp and Paper Industry.*" This bulletin discusses the microbiology of the pulp and paper industry and gives methods of applying Santobrite to stop losses due to slime, algae, protozoa and fungi. Send for your copy . . . today. MONSANTO CHEMICAL COMPANY, Organic Chemicals Division, 1764-E South Second Street, St. Louis 4, Missouri. *Santobrite Reg. U. S. Pat. Off.*

DISTRICT SALES OFFICES: Birmingham, Boston, Charlotte, Chicago, Cincinnati, Cleveland, Detroit, Houston, Los Angeles, New York, Philadelphia, Portland, Ore., San Francisco, Seattle. In Canada, Monsanto (Canada) Ltd., Montreal.

MONSANTO
CHEMICALS for PLASTICS

MONSANTO CHEMICAL COMPANY
Organic Chemicals Division
1764-E South Second Street, St. Louis 4, Missouri

Please send Technical Bulletin No. O-5, "Santobrite for Microorganism Control in the Pulp and Paper Industry."

Name ..... *Title* .....

Company .....

Street .....

City ..... *Zone* ..... *State* .....

SERVING INDUSTRY . . . WHICH SERVES MANKIND

Our Congressman Writes

What Kind of Government Have We?

It was a Republic. Some call it a democracy. Increasing numbers say it is Socialist. That makes people see red. Some want a mild form. Many others say we've got too much of whatever it is we have.

Let's call the world's most noted witnesses — men who have made it their life work to know the answers to these questions.

America's greatest living Socialist, Norman Thomas, has headed the Socialist Party ticket in the last six Presidential elections. He first ran on the Socialist platform of 1928. He and his platform got just 267,420 votes out of 37 million. In the depression year of 1932, his Socialist vote rose to only 884,781. Franklin D. Roosevelt won that election on a budget-balancing traditional American platform. But Mr. Thomas tells us that in four years, "Mr. Roosevelt had in some fashion carried out our immediate demands."

In his article entitled, "Republicans And Democrats Are Stealing From My Socialist Platform," Mr. Thomas observes: "What changes the years have brought! Indeed what changes in the platform and position of the Republican Party!" Speaking of the 1948 Republican platform, he says "that in 1928 it would have been regarded by Mr. Hoover and his followers as Socialistic. The Democratic Party would have held the same opinion." In closing he writes, "As I look back on the years, I could be reasonably content with progress, except for our failure to cast out the demon war." In effect he wrote: I presented honestly the Socialist program to the people. They rejected it. I got less than a million votes after 25 years. But the old parties took the American people into Socialism without their suspecting it. My work is finished. A few days ago he said: "I do not expect to run for the Presidency again."

America's outstanding living Communist, Earl Browder, has also spoken. Twice the Communist Party's Presidential candidate, he knows what Marx taught Socialism to be. In a recent pamphlet, he tells us that, "State capitalism leaped forward to a new high point in America in the decade 1939-1949. It became overwhelmingly predominant in every major phase of economic life, and changed the face of politics. State capitalism has progressed further in America than in Great Britain under the Labor Government, despite its nationalization of certain industries, which is a formal stage not yet reached in America; the actual, substantial concentration of the guiding reins of national economy in governmental hands is probably on a higher level in the U.S.A. . . . (than in Great Britain).

"The general trend to state capitalism signifies a yielding of capitalist private ownership for more socialized forms of the economy and results in a more socially-organized economy. . . . Each important measure of state capitalism is a part of the whole movement which results in the socialist transformation. . . . State capitalism is the invasion of planned production and points the way to Socialism. . . . The U. S. Government has emerged as the greatest trust of all, the super-trust whose economic operations dwarf the largest private corporation. . . . The trend to state capitalism marked the final monopolistic stage. After monopolistic capitalism the only higher stage possible is the fully-socialized society."

The late leader of British Socialism, Harold J. Laski, has told us, "Since it is the Socialist belief that the central principles of the New Deal have come to stay, the Socialist Government in Britain can have the confidence that America will advance in a collective direction and at an increasing tempo."

England's leading advocate of economic communism, her War Minister, John Strachey, says the present U. S. Administration "is one of the most left-wing governments of the world today." He recently told American students at Oxford that "Outside the United Kingdom and the Scandinavian countries, the U. S. Administration today is probably more to the left in general economic policy and point of view than any of the governments of western Europe."

So the world's greatest living authorities on the subject have settled the issue.

Are you going to do anything about it? If you want to recover liberty you will find 70 percent of the people want to join forces with you. If we will unite and act in time we can win the battle against this sneaking, creeping socialism advancing under false colors in America. If we recover it for ourselves and our children, the rest of the troubled world will strive to overthrow their Socialists and dictators.

Then the dawn of peace will appear.

Wilson Joins Gibraltar

NEWARK, N. J. — Gibraltar Corrugated Paper Co., North Bergen, N. J., has announced that Elliott Wilson is now associated with the company as vice-president in charge of paperboard sales, with headquarters at North Bergen.

Damtoft Heads Traffic League

RALEIGH, N. C.—Walter J. Damtoft of Canton is the new president of the North Carolina Traffic League.

Damtoft, an official of the Champion Paper and Fibre Co., was elected at the annual meeting of the league.

Gottesman Leases Quarters

NEW YORK—Gottesman & Co., wood pulp and chemical merchants, have leased a floor in the new thirty-six story office building at 100 Park Avenue. Part of the floor will also be occupied by the Gottesman's subsidiary, the Central National Corp., investment bankers and paper importers and exporters.

Menasha Promotes Graebner

MENASHA, Wis.—Wm. H. Graebner, manager of Menasha's waxed paper plant, was promoted to manager of the central production staff, according to an announcement by Roy J. Sund, vice-president in charge of manufacturing. Succeeding Mr. Graebner is Norm H. Foley who has been with the company for over 30 years in technical and manufacturing positions. He was recently superintendent of the waxed paper converting unit and paper mill.

Anderson Resigns From Eaton

PITTSFIELD, Mass.—Gregory G. Anderson has resigned as assistant sales manager of the Eaton Paper Corp., it has been announced.

Mr. Anderson came to Pittsfield in 1941 to take charge of Prinscript production at Eaton. He was appointed assistant sales manager a year later and early this year was put in charge of all order department procedure.

E. B. Eddy Appointments

OTTAWA — A. Welch, general manager of the E. B. Eddy Co., has announced the appointment of D. G. Currie as manager of manufacturing, H. Crabtree as mill manager of the specialty paper mills, and C. B. Davies as mill manager of the pulp and newsprint mills.

Wallingford Named Director

BOSTON—Howard Wallingford, vice-president in charge of sales, Tileston & Hollingsworth, has been made a director of the company.

Shaver Resigns From Continental

LYONS FALLS, N.Y.—Roy W. Shaver, vice-president, Continental Can Corp., in charge of the Gould Paper Co. Div., has resigned. Mr. Shaver was instrumental in the sale of the company to Continental and has completed a tremendous program of modernization and rehabilitation, not only in the mill, but many parts of Lyons Falls.

Mr. Shaver's plans are indefinite except for a long rest at the advice of his physician.

Paper For China and Greece

WASHINGTON, D. C.—Paper and related products totaling $196,000 was among procurement authorizations for China announced this week by the ECA.

The paper will be procured by the Federal Supply Service, from United States sources.

Another paper procurement authorization totaling $50,000, for Greece, was also reported by the agency.

Timber is a crop...

Timber supplies need never be exhausted, because "Timber is a Crop"... and because far-sighted forest management is harvesting timber more judiciously and stretching it farther through improved wood utilization.

The Weyerhaeuser policy of forest management, protecting the productivity of its forest tracts, is based on the determination to maintain a continuous supply of forest materials for the future. Under this "sustained yield" program each tree farm is preserved by first harvesting the timber crop and then insuring a new crop by the hand planting of seedlings and by leaving blocks of mature trees as a source for natural reseeding.

The Pulp Division, Weyerhaeuser Timber Company, ever striving for greater efficiency in wood utilization, has nearly doubled the pulp production from a given forest acreage. New mill developments such as hydraulic barking, whole log chipping and slab barking make possible more complete utilization of the forest crop... insuring an adequate supply of wood now and in the future.

PULP DIVISION

WEYERHAEUSER

Organizations Serving Paper
And Pulp Industry—V of Series

Leeds & Northrup—Instruments for the Paper Industry

In this year of 1950, thanks to the vision and ingenuity of leaders in that industry, paper is one of the materials which is facing an expanded demand. As in all dynamic American industries, old products are being improved and new products developed. And hand in hand with them goes the constant search for ways to lower costs while maintaining or improving quality. It is here that the suppliers to the industry, including such instrument makers as Leeds & Northrup Company, contribute so much. In at least four ways Leeds & Northrup instruments are serving the paper industry—by recording and controlling pH, by recording and controlling SO_2, by recording the speed of calender and other rolls, and by recording and controlling significant process temperatures.

There seems little doubt among paper manufacturers, that of these uses of instruments in the industry, none is more important than the effective regulation of pH.

With more mills forming sheets at higher pH values, the problem of adding chemicals at exactly the needed rate is becoming more important and more difficult. *More important* because small variations in pulp, in pulp furnish, shower water, size of alum or other chemicals — variations which usually mean little when pH is low—mean a great deal to the quality of the finished paper when pH is high. *More difficult* because as the pH values approach neutral the stock is affected to a greater degree by variations in the addition of chemicals. If these higher pH values are to be maintained uniformly, the addition of reagent must be more precise.

Many paper manufacturers have solved this problem through the use of automatic control, which measures the pH of stock and regulates the addition of reagent *continuously*, so that stock goes on the wire uniformly at any selected pH. Corrective adjustments are made automatically every time pH *begins* to deviate from specified value. There are no periods, such as exist between the testing of grab samples, when pH is unknown.

The advantages of this system are many:

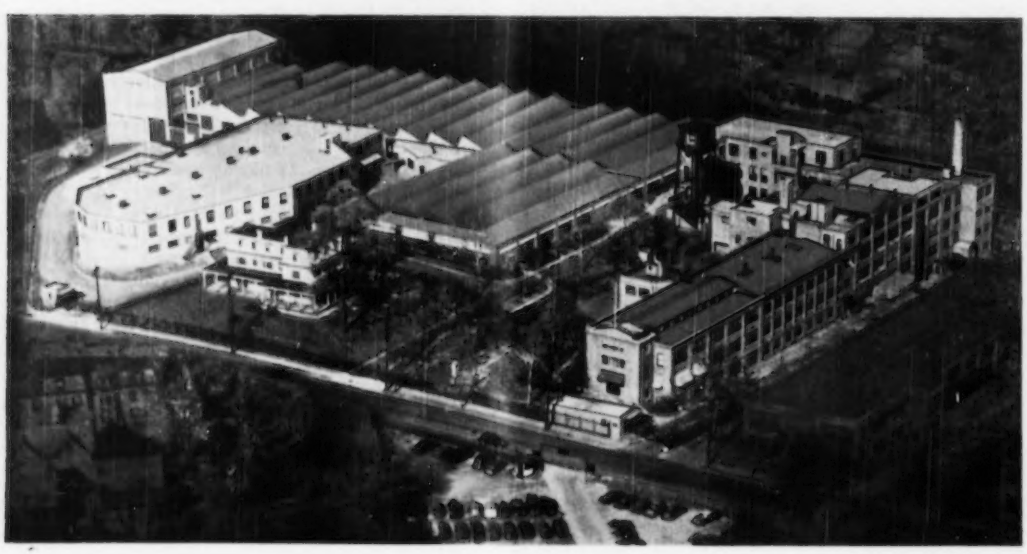
1. Greater uniformity of those paper characteristics which are effected by pH, such as strength, texture, and color. Results secured on one run are repeated with ease and certainty on later runs. Control over color is precise, and off-color rejections are held to a minimum.

2. Greater retention of stock going onto the wire: With the furnish, the reagent, and the pH all held uniformly at specified values, white water losses are at a minimum.

3. Longer wire life: With pH held so uniformly at the higher values, there is less corrosion, because less active acid is present at the higher pH values.

4. Saving in chemicals: No more

Figure 1. Airplane view of the plant of Leeds & Northrup; Philadelphia Manufacturer of electrical measuring instruments, automatic controls, and heat-treating furnaces.



than the amount actually needed is added. Dumping in excess reagent to be on the safe side is no longer necessary.

5. Permanency of finished paper is easy to attain, because pH can now be held uniformly at higher values.

6. Corrosion in the Jordans and accessory equipment is greatly reduced by control of pH at a point nearer neutral.

7. When the sheet is held at optimum pH there is often a reduction in the number of breaks.

In pH control, the recording controller is a Micromax or Speedomax automatic potentiometer. Its measuring circuit connects to a pair of electrodes and to a thermometer, both mounted in a flow chamber or in an immersion unit. As the stock solution or white water flows past the sensitive parts, the electrodes set up a voltage, proportional to pH. This voltage is modified according to the temperature of the solution by the compensating action of the thermometer. Thus a voltage representative of actual pH at the operating temperature is carried to the instrument's potentiometer circuit. There it is balanced electrically against an adjustable standard voltage, and the resulting value is continuously indicated on a pH scale by a pointer and continuously recorded on a chart by a pen.

If pH begins to depart from the control value, the controller, acting through a powerful drive mechanism or by means of pneumatic action moves the control valve to increase or decrease the flow of the corrective reagent. If the deviation is large, the valve is moved a large distance; if the deviation is smaller it is moved a correspondingly smaller distance.

As a result of this proportioning action, small pH fluctuations are headed off before they can become large. As pH is forced back toward the control point, the controller gradually reduces the valve opening so that pH and valve both come smoothly to a halt at the point of balance.

Where pH of the stock is to be measured and controlled, at the screen flow-box, the immersion unit is mounted in it, or the sampling line to the assembly is tapped off from the screen flow-box, and the exhaust line is run to the white-water pit discharge or tray. The control valve is located in the reagent supply line feeding to the sand-trap. But when the assembly is to detect and control the pH of white-water, the sampling line is tapped off the return white-water pipe, while the exhaust line is carried to the mixing box, and the valve is located in the reagent supply line feeding to the white-water pit discharge, or to the fan pump suction.

Another use of pH control is in the treatment of raw water. Still another application is in waste neutralization, where the treatment of waste for coagulation requires treatment which is a function of or dependent upon pH.

Behind the paper industry's present use of pH measurements lies many years of technological advance in instrumentation. By the early 1920's, the necessary recording controller was available in the L&N Potentiometer Pyrometer, which could be readily adapted to measure the voltage of pH systems. L&N first brought out the Quinhydrone Electrode; this was the earliest really easy-to-use device which allowed pH conditions at various stages in pulp and paper making to be manually checked. This knowledge

Figure 3. Morris Evans Leeds, Founder and now Chairman of the Board of Leeds & Northrup Company.

gained by intermittent measurements, whetted the industry's appetite for some way to secure automatic measurement and control. Then, in the early '30's, came the antimony electrode for continuous service, followed shortly by the forerunner of today's "glass" electrode; with it, automatic pH instrumentation was available to the entire paper industry. L&N began field tests to determine how the electrode system could most affectively be used, decided on the points where measurements could be made, and made the results of this survey available to all Fourdrinier users. The necessities of war interfered with instrumentation for a time, but with the cessation of hostilities, paper mills again started to obtain pH instruments, and this phase of the modernization of a great industry has been proceeding rapidly. Today's Micromax and Speedomax Recording Controllers, together with electrodes which may be either of the flow type or the immersion type, are simple, husky, dependable units which meet fully the needs of pulp and paper mill men.

Figure 2. Examining the Micromax record of pH value of paper stock at Mosinee Paper Mills Company.

SO_2 Control Improves Uniformity

Paper manufacturers are also finding Micromax instruments of greater and greater value in controlling SO_2 when making up the acid used in sulphite cooking. There are two important features in modern instruments used for this purpose — a no-maintenance mist filter for the sampling line which eliminates all cleaners and driers, and a measuring cell in which the sample contacts glass only, eliminating cell corrosion. As gas leaves the burner, a continuous sample can be taken and analyzed so quickly that recorder response to burner changes is almost instantaneous. The Recording

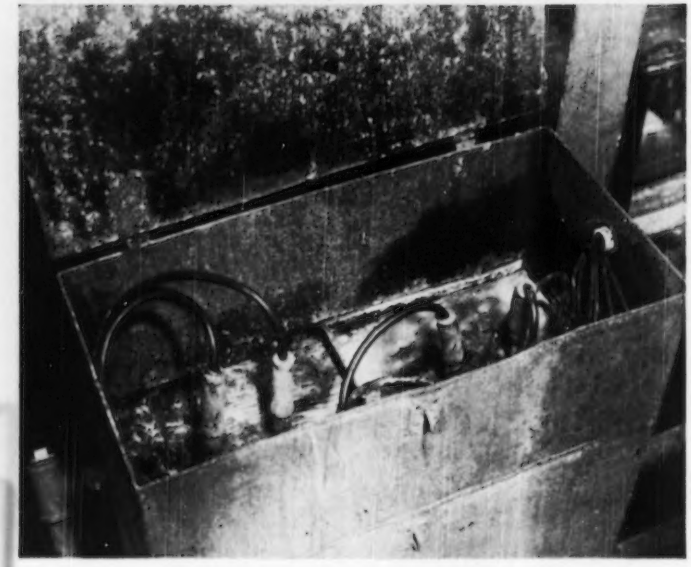


Figure 4. Typical installation of conductivity cells for Kraft pulp washing.

Controller is another member of the family of Micromax instruments referred to above.

Making available the well-known advantages of continuous SO_2 measurement, these instruments insure the continuing economics which result from keeping gas concentration constant. In a process where accurate measurements can effect great savings, they easily justify their initial cost.

Automatic Check on Soda Recovery

Micromax instruments are also being applied to another important phase of the kraft pulp and paper making industry—recovery of soda from pulp-wash water. The problem here, of course, is to determine just how much soda is in the water, so that the recovery can be stopped before it costs more than it is worth. Until recently, a chemical analysis of grab-samples taken from different stages in the process has been the method used to locate the end point of recovery.

However, instrument engineers have developed a method of continuous analysis based on conductivity measurements. Calibrated to show pounds of soda per gallon, the L&N instrument reports concentration not only continuously and automatically, but also instantly, so that the exact amount of soda present in the wash is known when it is news instead of history. Hence the instrument shows the most economical time to cease washing. Moreover, even after this critical point is passed and the remaining wash is presumably flowing to waste, the instrument can continue to record soda strength, so that management may know exactly how many pounds of chemical are being lost to the sewer.

Usually installed at the second and the third stage washers, the Recorder's two conductivity-sensing cells are simply mounted in any suitable flow of the pulp washings; connecting lead wires are then run from the cells to the recorder, which may be at any convenient location. One cell contains a standard soda-reference solution. The other cell is the measuring unit, influenced by the concentration of the wash solution flowing through it. The recorder continuously compares the conductivity of the two cells, and on its scale translates this conductivity ratio into pounds of soda per gallon.

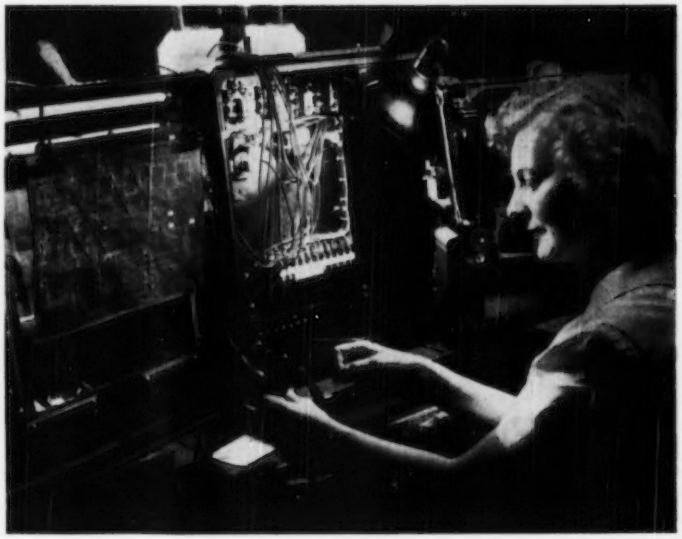
Electrical Measurement of RPM

Many L&N instruments are used in the paper field to record the speed of the final roll. Again the balance method of measurement is adapted for this purpose. The roll drives a tiny d-c generator, whose output voltage is proportional to its speed. Hence the instrument recording this voltage can be calibrated to show rpm or feet per minute. In fact, it has been said that these modern instruments can record any range of speed, from the main drive of a paper machine to the movement of the slowest machine.

Low-Maintenance, High-Accuracy Temperature Instruments

With paper technology advancing steadily, and with the operating costs of all kinds of equipment becoming more and more a factor in paper-making profits, another type of L&N assistance is now coming into use in paper mills. This is in the form of temperature measurement and control, using Micromax or Speedomax instruments with Thermohm electrical-resistance thermometer bulbs as the sensitive elements. These elements are small, strong and easily mounted. They are highly sensitive and accurate, being in fact "cousins" of the detectors used for highest attainable precision in research, and in the calibration of other temperature instruments. From the maintenance angle, the Thermohm's Micromax or Speedomax needs only the slightest attention. These in-

Figure 5. A recorder is completely wired by one operator who is guided by a specific blueprint for the Micromax on which she is working. Hundreds of feet of wire may be used, each soldered to its connections in the instrument.



struments do not lose sensitivity or accuracy with long use; hence do not require the complex disassembly in cleaning and reassembly of other types. If a Thermohm is accidentally damaged, it is replaced on the job, without affecting the calibration of the instrument. Because Thermohm units can be located at any desired distance from the measuring instrument, multiple point recorders can be used to collect data from many locations all over the plant, and have all readings equally dependable. Probable applications of Thermohm and L&N Recorders may be in digesters, washers, evaporators, jordans, dryer rolls, lubrication systems, etc.

American Instruments For World Use

The story of the company behind these instruments, and the remarkable man who founded it, is hardly less interesting than the products themselves.

Back in the '80's, when the science of accurate measurement was struggling for a foothold outside of the laboratory, a young man by the name of Leeds — Morris Evans Leeds — graduated from Haverford College, in the quiet countryside near Philadelphia. He had of course no idea how profound would be his influence in welding science to industry, and raising the standards of each, but he was scholarly, inquisitive, and impressed with the tremendous advance of science and its effect upon the way men could live. Furthermore, Leeds was concerned with improving the general level of human life—an idealist, if you wish, but a highly practical one. He was a Quaker whose training had steadfastly instructed him to do something useful both for himself and for society as well.

Leeds started in the instrument business with Queen & Co., then the leading American instrument maker and importer He spent the next nine years, here and in Europe, gaining experience in the business and its technology. He saw good instruments and poor; thoughtful management and callous; wise financing and foolish. It was a trying but tremendously stimulating period. From it Leeds emerged in 1899 to organize his own company, (later joined for a few years by the brilliant physicist Edwin F. Northrup; hence the firm's name) along lines that might even today be considered advanced.

Product-wise, Leeds decided to make *null* or balance-type instruments. The market for them was apparently small, but they were and are basically the most accurate type, and accuracy was to be the foundation of the enterprise. The market grew rapidly once the instruments became available.

Management-wise, Leeds was deeply imbued with two ideas: Every worker ought to receive the equivalent of his contributions to the enterprise; and every person should find satisfaction by having opportunity to do work that he liked at a level of responsibility suited to his ability. His ideal of justice and his desire for a permanent organization, of course, combined to benefit his customers by assuring them a dependable source of instrument supply, in a field where long experience on the part of the supplier counts so heavily. In this respect, instrument making and paper making are much alike.

Once on his own, Leeds quickly showed capacity not only to formulate ideals, but to translate them into tangible action. The early L&N instruments were the first made in America which were able to compete in world markets, and in 1906 came the Type K potentiometer, the first precision potentiometer made in America. Instruments of comparable accuracy were being manufactured in Germany and England, but they were not convenient to use. Whereas the foreign instruments had four, five, or even six dials to set, the Type K had only one dial and one slidewire to carry the range down to microvolts. Even today, forty-four years later, Type K has the same basic design. Modified in many details, it is still part of the Leeds & Northrup line and is today the most widely-used of all high-precision potentiometers.

Figure 6. The mechanical assembly of the Micromax recorder is completed by mounting the balancing mechanism, drive motor, recording pen or printwheel and automatic standardizer and the paper drive to mount the 40 yards of specially designed chart paper which each recorder uses. The instrument is then ready for electrical wiring.

Bringing Laboratory Accuracy to Industry

A few years after the Type K, Leeds completed and patented his automatic, self-balancing Recorder. The effect of this instrument on modern living would be hard to over-estimate; it brought entirely new levels of dependability to industrial measurement and so helped make thousands of manufactured products and services cheaper, better and more widely available.

For Industry by 1910, had reached the point where it needed greater accuracy. Its technologies, for two generations, had been greatly affected by the march of science. Even the most abstruse research was having indirect effects upon the speed and complexity of industrial processes. The thermodynamics of Gibb's, the metallurgical researches of Sauveur, the theory of the open hearth furnace of Siemens and Thompson, Emil Fischer's work in chemical synthesis, the advanced studies of Clark Maxwell and Hertz which made electronics possible — all were leaving their mark on industrial operations.

When World War I brought its imperative demand for more manufactured goods—and demanded the goods at once—industry could no longer rely on old-fashioned methods. The principles of mass production, based upon the interchangeability of parts, leaped into new fields. When armor plate and gun-barrels and cannon had to be made, there were not enough of the old, skilled heat-treaters to make them —and the few who were available were unequal to the task of turning out each product with the required degree of uniformity. But with instruments they and others could do the job—do it easily and with great certainty.

As the war created a need for tough gears and transmissions for automo-

biles and trucks as well as for airplane engines, Leeds & Northrup helped with its brand-new line of heat-treating furnaces, as well as its recorders and other instruments.

With the coming of peace, the process industries became larger users of L&N instruments. In 1919 a refinery asked for thermocouples *accurate to one degree F.* a new industrial idea. Sulfuric-acid plants began to think of measuring the strength of acid by new methods. Chemical plants needed more and more dependability in the operation of process instruments. Chemicals, are one of the many products which simply cannot be made without instruments, for the simple reason that they are usually made and handled in closed vessels and pipes, and only instruments can tell the operators what's happening. The development of the paper industry's interest has already been touched on. The electric-power industry turned to L&N for combustion controllers, temperature instruments, frequency recorders and, later, load-frequency control and telemeters. The Hump Method for hardening of tools and dies came into wide use for production hardening and then was joined by Homo equipment for the tempering, nitriding and carburizing of steels and other metals.

The second World War not only brought enormous need for standard L&N products, but called for the development and manufacture of entirely new products for direct combat and other fighting-front uses. In this connection, the Company and some of its personnel took a heavy burden of special research responsibility, which temporarily slowed the development of established L&N lines. With the end of the conflict, the former policy of constant study and improvement of products was resumed, to continue assurance of the latest and most reliable equipment for science and industry.

Because of the importance of temperature in all industry, development of automatic controllers, recorders and indicators for this work has always been a prime L&N activity, with special stress on dependable performance, high accuracy and sensitivity. Since research as well as industrial problems are included, all ranges from almost absolute zero, through the melting and boiling points of most metals and on up to 5200 F. are measured with standard L&N instruments.

Ideals, Ideas and Policies

In the field of industrial philosophy and personnel relations, as well as in the design and manufacture of instruments, Morris Leeds and the company he founded have made many notable advances — some of them widely adapted by other industries.

Leeds instituted, for example, a Cooperative Association, governed by an elected Council. Through this device, all employees share importantly in various activities, including not only athletics and entertainment but also education, charitable and relief efforts and the publication of their monthly magazine. This latter, incidentally, is one of the few employees' magazines which was originated by and for employees without management inspiration. An editorial employee handles inside desk work, but the responsible editor is an instrument maker, and the magazine is reported, photographed and edited by salesmen, clerks, engineers, mechanics and others.

An Educational Plan provides part payment of tuition for employees who pursue outside studies to improve their usefulness to themselves and to the company. A Sick Benefit Plan, and a Hospitalization Plan are other long-landing and successful activities of the Association. Dating back many years is an Unemployment Fund which has been of great benefit; it has of course been modified from time to time as necessitated by Federal and State legislation.

Profit sharing for some employee brackets dates back to 1916, and for the past several years has included all personnel having over 1 year of service. A Pension Plan is integrated with other L&N policies for the benefit of older employees.

A key device for assuring the continued interest of desirable personnel is a stock plan. Under this, employees who meet certain reasonable eligibility standards may buy voting stock in the concern. If an employee - stockholder leaves the company, his holdings are automatically converted to non-voting shares; thus Leeds made sure that the concern would never be plagued by absentee ownership, proxy fights and the like. On the other hand, employees are never solicited to buy stock, and if they do buy, an effort is made to point out that purchases should be in keeping with the employee's level or responsibility and in line with his other savings or investments.

Such advanced ideas brought widespread recognition to Mr. Leeds. In 1931, even before many of the above plans had assumed their present advanced form, *Forbes Magazine* sponsored a nation-wide contest for the best employer-employee plan currently in operation. The first prize went to Mr. Leeds and to the L&N Cooperative Association. And in 1936 the Institute of Management awarded the Gantt Medal to Mr. Leeds "for distinguished achievement in industrial management as a service to the community."

One of the results of L&N personnel policies is that 117 of the 1800 members of the organization have been with the company 25 years or more. Almost weekly, in fact, service awards are presented to men and women who have been with the company fifteen years or longer.

Thus the industrial relations policies of Mr. Leeds have proven their efficacy in building an organization of men and women thoroughly experienced in the complexities of producing precision instruments. And over a period of fifty years, the instruments produced by Leeds & Northrup have won world-wide recognition for their accuracy and dependability.

Sericea As A Source Of Paper

M. E. BARKER[1]

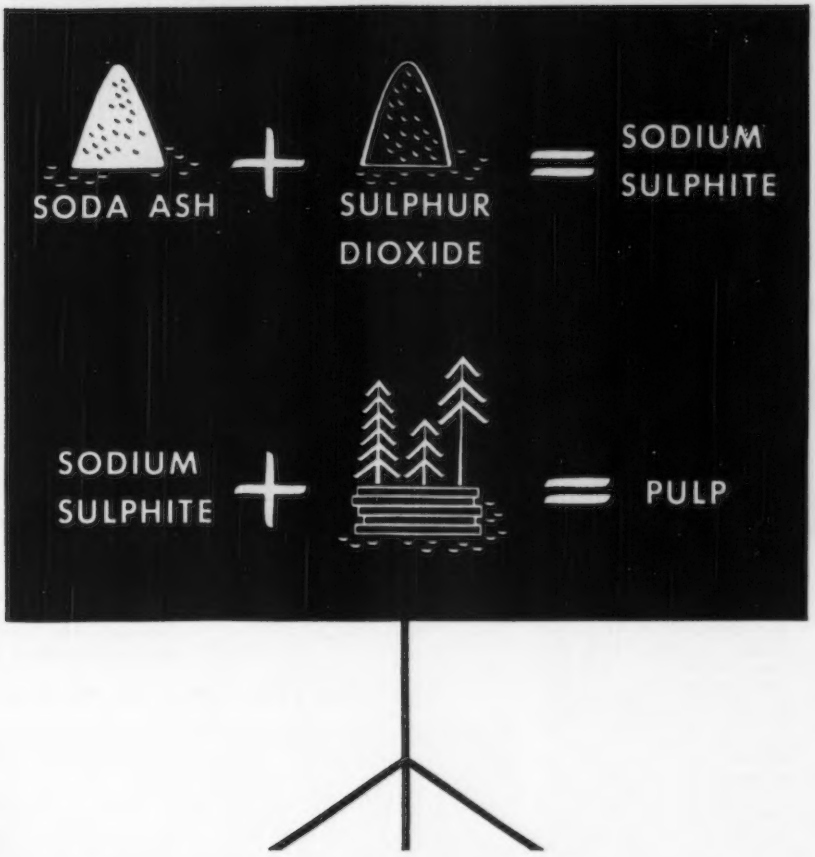
Introduction

Millions of acres of marginal farm land in the Ozark Region of Arkansas, Missouri, and Oklahoma are washing away and are growing up in persimmon bushes and scrub oak. Something needs to be done *now* to halt this destruction of soil and to introduce a combination of local industry and crops to restore prosperity to the rural sections of this area, and many other similar areas in the United States.

South of the Ozarks pine trees are now growing over wide areas that were cottoned to death thirty years ago; and the pine forests feed a number of great paper mills in that area. Hence, it is but natural that the Engineering Experiment Station of the University of Arkansas should look for some paper-making plant, or plants, that might be introduced into the Ozarks. In order to stop further soil erosion, damage to the water resources of the state, and the damage of rich river bottom farm land, it was, and is, imperative that soil conservation be coordinated with industrial development. Since the country as a whole needs more paper than is grown here, paper production again appears to be a good answer from the industrial viewpoint.

A combination of Lespedeza Sericea and Biclor Lespedeza appears to be a good solution to the above problems, for once started these two hardy perennial leguminous plants thrive in the poor soil of this area and make heavy growths the second year after planting; then continue to grow more and more luxuriantly year after year.

[1] Department of Chemical Engineering, University of Arkansas, Fayetteville, Ark.



How costly is YOUR sulphite liquor?

Wyandotte Technical Service has made an extensive study of the costs of producing sodium sulphite. As a result, some pulp and paper makers produce their own sodium sulphite cheaper than they can buy it.

They buy sulphur and soda ash in bulk. They fit the manufacture of the sulphite liquor right into their own processes. They find it pays.

Will it pay for you? We don't know. But we'll be glad to help you investigate. Why not get in touch with the Wyandotte office nearest you? Or you can write to us direct.

SODA ASH • CAUSTIC SODA • BICARBONATE OF SODA
CALCIUM CARBONATE • CALCIUM CHLORIDE • CHLORINE
HYDROGEN • DRY ICE • SYNTHETIC DETERGENTS • GLYCOLS
CARBOSE (Sodium CMC) • ETHYLENE DICHLORIDE • PROPYLENE
DICHLORIDE • AROMATIC SULFONIC ACID DERIVATIVES
OTHER ORGANIC AND INORGANIC CHEMICALS

WYANDOTTE CHEMICALS CORPORATION
WYANDOTTE, MICHIGAN • *OFFICES IN PRINCIPAL CITIES*

Wyandotte

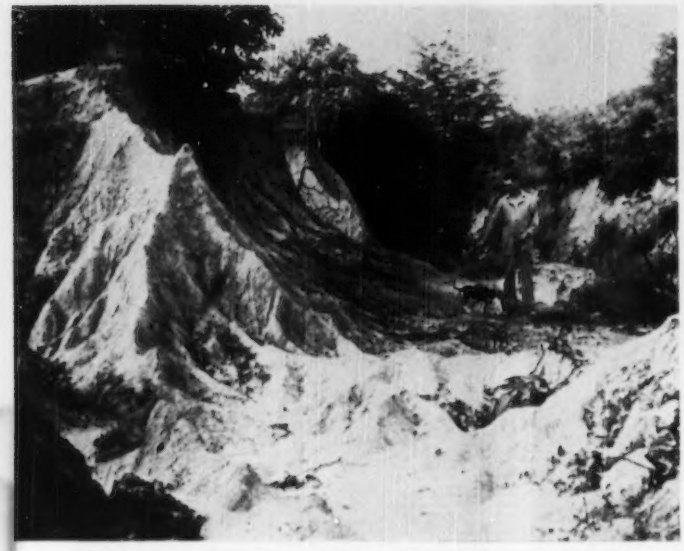


Figure 1. Erosion is a national problem of major importance. (Washed hillsides, silted streams, and lowered groundwater levels affect paper makers especially.)

(4)(5) The stalks can serve as an economic source of paper while the roots and leaves hold the top soil and enrich it with nitrogen taken from the air and with minerals brought up from several feet below the surface. The sericea plants grow well from Virginia through the central tier of states to Western Kansas, *(3)(7)* though unfortunately the crop is not well known to most farmers in this area. The crop requires considerable care during the first year when the plants make a slow growth. Then it becomes self perpetuating.

The advantage of sericea over pine for paper production lies in the fact that it takes less labor per acre to start sericea, and the crop can be harvested by the end of the second or third year instead of after twenty years, and the yield per acre is about the same.

Historical and Economical

Paper, as most everyone knows, was first made from rags mixed with bamboo and other plants, since wood is a comparatively recent development for paper-making. *(1)* Wheat straw in the United States and esparto grass in Europe and North Africa are examples of annual plants being used rather widely today for paper and paper board manufacture. *(2)* Many other farm crops have been used for this purpose *(1)* but in general the cost of collecting this material, and its seasonal nature and storage difficulties make these materials too costly to use. The major problem in connection with the use of any farm crop for paper manufacture is more economic than technical.

A survey of the possible farm crops capable of making paper on a large scale indicates that sericea has many advantages over any other known crop. First, this plant grows each year from the roots and the same roots put forth vigorous shoots year after year for at least fifteen years. *(4)(5)* In addition, seed falls on the ground each year and increase the density of the stand until a man can hardly force his way through the thick sturdy stalks that stand from four to six feet high at maturity. *(5)* The individual mature sericea stalks may be more than a quarter of an inch in diameter at the base. In the case of biclor the stalks may be nearly an inch in diameter and may grow to a height of ten feet. *(3)* Sericea ultimately crowds out practically every other plant growth except persimmon bushes in the field, and after the second year a piece of land that will scarcely make a hundred pounds of cotton lint per acre will produce about two and a half tons of dry stalks for paper making; and another two and a half tons of stems and leaves to stay on the ground. In addition about five hundred pounds of seed can be harvested, thus giving promise of another industry and another source of income from sericea grown for paper-making.

A great deal of the published work relating to the growth of sericea is based on work done at the West Ten-

Figure 2. The edge of a Sericea field in August. (Near Humboldt, Tenn.)

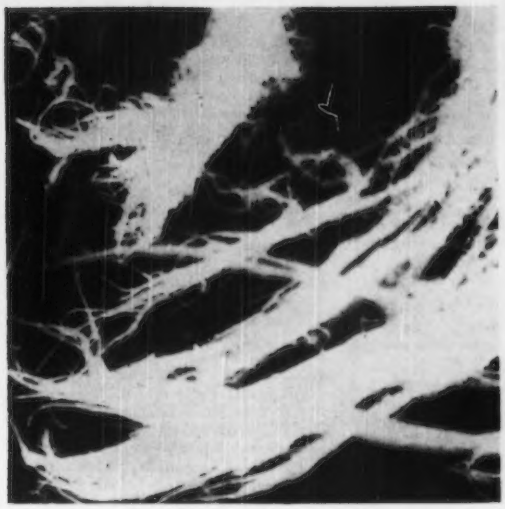


Figure 3. Bundles of Sericea fibers after defibration and before beating. Magnification 50x.

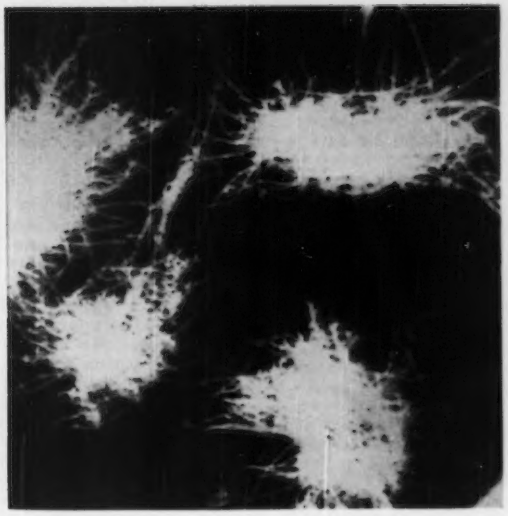


Figure 4. Bleached Sericea Fibers after beating. Magnification 50x.

nessee Experiment Station at Jackson. The author has had practical experience for about twenty years in growing this crop on his farm in West Tennessee; therefore, he has accumulated some information on the characteristics of the plant and its yield not found in the literature. Sericea stalks are nearly fire resistant and contain an oil that repels water. Once the surface of sericea stalks are wetted, the stalks (with the pith removed) sink in water. Dry stalks remain unrotted in the field for two years or more. This resistance to rot and the obvious fibrous character of the stalk led to the paper-making trials described later in this paper. So far as is known no report is available in the literature on the paper-making qualities of sericea, but it is reported that a research organization at Birmingham, Alabama, is carrying out work on this project. However, nothing is known of the results obtained. *(8)*

About twenty years ago sericea was advertised by some enthusiasts as the new miracle plant for the South that would provide wonderful pasture; produce more hay on poor land than alfalfa would on the richest of land; would stop soil erosion and would build the top soil to amazing fertility in a few years.

According to the author's experience the plant does stop erosion and enriches the top soil rapidly; but a billy goat will eat an old newspaper rather than eat the growing plant or the hay from the plant when it is more than a foot high. Consequently, sericea is now grown mostly as a long term crop for soil enrichment, to stop soil erosion, and for its seed value. Biclor lespedeza is now grown for soil conservation as a haven for quail because of its dense growth and abundant, rich seed. Usually biclor is grown as a border on a field or as a strip along the well drained edge of woods or in waste corners.

As a paper crop it has some good possibilities, *(9)* although data on tonnage yields per acre per year are lacking. Harvesting these huge stalks for paper-making might be a much more expensive problem than harvesting sericea, which could be cut just before frost to combine the seed and scatter the leaves, after which the stalks could be baled in the field and hauled to market, the whole process being carried out mechanically with a minimum of hand labor.

It is estimated that many locations could be found, as for instance at Clarksville, Arkansas and Humboldt, Tennessee, where enough sericea could be grown within a twenty mile radius to supply a modern two hundred tons per day paper mill without reducing the normal production of other crops now grown in the area. The stalks would cost the paper maker about fifteen dollars per ton dry weight in order to make the crop a paying one for the farmer. Since a pulp yield of nearly fifty percent would be obtained, the raw material cost is estimated to be about thirty dollars per ton of paper pulp produced.

Experimental Paper-Making

Having collected all available data on the growth, the plant characteristics, and the probable cost of this possible paper-making material and having found these data encouraging from an economic standpoint, the problem of cooking the stems and producing paper pulp in a pilot plant by an efficient method was assigned as a thesis subject to a group of four seniors in chemical engineering at the University of Arkansas in September 1949.

Cooking was done in a direct-fired, two gallon autoclave; and in a one gallon steam heated autoclave with a circulating liquor pump. Semi-chemical pulping, soda cooks, sulfite cooks, and sulfate cooks were tried through a rather wide range of temperatures, pressures, times, and concentrations of cooking liquor. Both types of cookers gave equally good results. One factor at the time was varied until a general knowledge of the results to be expected from each variable had been determined. At a later date we will publish this information, but for the present it seems sufficient to give the final results and conclusions with a warning that the work has not been carried out over a long enough period and in a sufficient number of cases to be dogmatic about the exact temperature, pressure, and strength of cooking liquor that will be necessary for a particular type of pulp. Therefore, the results presented in this paper must be considered as qualitative rather than quanitative; but the summary that follows is an indication that the process is technically simple and practicable.

Nature of Fiber Produced

Sericea stalks have a narrow pithy center; but the wood of the plant is denser than oak, has a wavy surface when split, is water repellant when dry, and has a peculiar greenish-yellow color. When the stalks are cooked and disintegrated, the wood breaks up into rope-like bundles of brownish fibers with the ropes being as much as an inch long and containing hundreds of individual fibers.

A moderate amount of beating separates the fibers from the bundle; and the pulp, when bleached and dryed in

bulk, is a strongly coherent mass. The individual fibers are about one-half the diameter of spruce wood fibers used in paper-making and come in various lengths, but generally they are somewhat shorter than typical spruce wood fibers. The individual kinky sericea fibers frequently have rolled, looped, and corkscrew shaped ends.

Occasionally, extremely long strong fibers can be separated from the cooked stalks. For instance, we obtained one extremely strong fiber that was 4½ inches long and approximately .004 inch in diameter; but the typical individual fiber is more likely to be about 0.05 inch in length and about 0.0015 inch in diameter.

The sericea pulp must be well beaten for paper-making; then the unsized paper is soft and smooth to the touch. We lack experience in making quantities of sized paper and testing it; hence, reliable data cannot be given on the strength of the paper made from sericea pulp.

Summary and Conclusions

a. A modified sulfate cook using a pressure of 120 psig, a temperature of 350°F., and a cooking time of 120 minutes gave a satisfactory product and a yield of nearly 50 percent pulp on the dry weight of the sericea stalks used. A weight of ± 17 percent sodium hydroxide (NaOH) and ± 10 percent sodium sulfide (Na_2S) of the dry weight of sericea chips used, with a ratio of six weights of cooking liquor per unit weight of dry sericea chips was satisfactory. As an example, 2.3 pounds of sericea chips, 13.2 pounds of water, 0.4 pound sodium hydroxide and 0.25 pound of sodium sulfide made up a satisfactory pilot plant batch for the two gallon autoclave.

b. The process that appeared to be satisfactory both as to handling and cooking in the production of a soft pulp was carried out as follows:

1. The stalks were cut into one inch lengths and run through a debarker that blew away the light skins rubbed from the stalks.

2. The debarked stalks were passed between crushing rolls to crack the dense stalks and thus allow quicker and better penetration of the cooking liquor into the stalks.

3. The chips were then cooked, disintegrated, washed, given a preliminary beating, bleached, washed, beaten, and formed into pulp.

4. The bleached pulp was then used as a part of the furnish and made into laboratory sized sheets by standard methods; or the bleached pulp was used for treatment in standard ways as a chemical pulp for acetate or rayon production.

Acknowledgment

The author wishes to compliment the student group, consisting of Messrs. Mark Lesem, Jack Griffin, John Delaloye, and Jules Hendrix for their excellent piece of work in carrying out the pilot plant operation connected with paper-making from sericea.

Bibliography

1. Thompson (Editor); *The Progress of Paper,* The Lockwood Trade Journal Co., Inc. (197).
2. Witham; *Modern Pulp and Paper Making,* 2nd Edition, Reinhold Publ. Co., New York (1942).
3. Pieters; Leaflet No. 248 (1948), *(Bicolor Lespedeza For Soil Conservation,* etc.).
4. Mooers & Hazlewood; University of Tenn. Bulletin No. 197 (1945), *(Sericea As A Soil Improving Crop For Corn).*
5. Pieters; USDA Leaflet No. 100 (1930), *(Lespedeza Sericea As A Perennial Specis).*
6. Mooers & Ogden; University of Tenn. Bulletin No. 154 (1935), *(Lespedeza Sericea).*
7. Pieters; USDA Circular No. 534 (1935), *(Lespedeza Sericea,* etc.).
8. Southern Research Institute; Private Communication (1950).
9. Mr. Ben Hazlewood (Supt. West Tennessee Experiment Station); Private Communication (1950).

Corrosion — III of Series

Corrosion in the Paper Mill

J. S. OVERBAGH[1] and W. H. BIRCHARD[2]

Most paper mill equipment is replaced sooner or later because of erosion or corrosion. Of these two destructive agents corrosion is probably the more important. Simply stated, corrosion is the destruction of metal by chemical or electrochemical action. This is in contrast to erosion, which is destruction by mechanical means. Specifically, the action of corrosion involves a transfer of electrons in which some positively charged ions in the corroding solution lose electric charges which are acquired by the metal going into solution. It is necessary to have an anodic and a cathodic area occurring simultaneously in close proximity to each other. The flow of electricity between the anodic and cathodic areas may be generated by local cells set up either on a single metallic surface or between dissimilar metals.

If for some reason a current is applied from some external source, this rate of corrosion is materially increased. An instance is recalled where an iron water pipe passing under trolley tracks corroded rapidly at a point directly under the steel rails. The pipes were replaced a couple of times before it was recognized that the field set up by the live trolley tracks was the cause of the accelerated corrosion. After the pipes were shielded, excessive corrosion ceased.

Even though all types of corrosion are more or less interrelated, it is possible to study the various factors affecting corrosion.

Hydrogen Ion Concentration

The tendency for metals to corrode by the displacement of hydrogen is indicated by their position in the electromotive series, *Table I.*

The values given in *Table I* were obtained with a molar solution at 77°F. For other concentrations and temperatures, different results will be obtained.

An inspection of this table is of interest as it offers an explanation for many corrosion problems. The metals above hydrogen in this series tend to displace hydrogen and the higher they are above hydrogen the greater is their tendency to displace it. Similarly, the metals below hydrogen have progressively less of a tendency to replace hydrogen until gold is reached, which is quite inert. A decrease in the hydrogen ion concentration or acidity tends to move hydrogen up in the series relative to the metals.

Whether or not visible hydrogen will be given off depends on several factors. The phenomenon of overvolt-

TABLE I

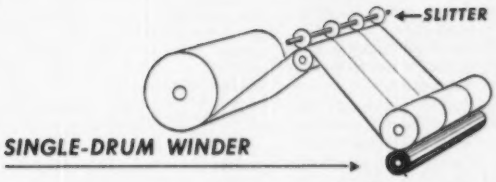
Electromotive Series

Metal	*Volts*
Magnesium ++	—2.34
Aluminium +++	—1.33
Zinc ++	—0.76
Chromium +++	—0.71
Iron ++	—0.44
Cadmium ++	—0.40
Cobalt ++	—0.29
Nickel ++	—0.25
Tin ++	—0.1[illegible]
Lead ++	—0.13
Hydrogen +	0.00
Antimony +++	+0.10
Copper ++	+0.34
Silver +	+0.80
Palladium ++	+0.83
Mercury ++	+0.85
Platinum ++	+1.20
Gold +++	+1.42

1. Plant Engineer, Fraser Companies, Ltd., Edmundston, N. B.
2. Asst. Chief Chemist, Fraser Companies, Ltd., Edmundston, N. B.

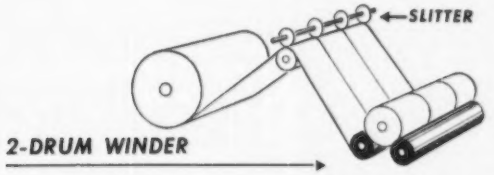
Here they are . . . those better

MOORE & WHITE single-drum, 2-drum and 4-drum WINDERS



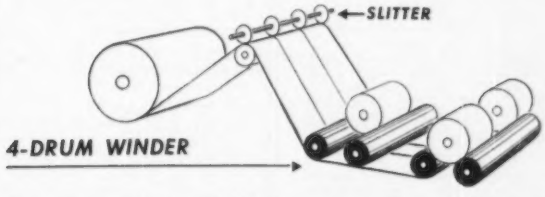
SINGLE-DRUM WINDER

This single-drum winder is simple, compact, and efficient. It is especially suitable for use with lightweight papers, tissues, and crepe toweling where retention of the pattern is important. This type of winder is also well adapted for winding textiles, rubber coated sheets, plastics, and the like.



2-DRUM WINDER

The Moore & White 2-drum winder will effectively wind most grades and types of paper. Individually driven winding drums—with or without binder rolls—same driven or idling, depending upon the particular types of paper to be wound.



4-DRUM WINDER

Our 4-drum winder is probably the most versatile type of winder built today. It has numerous applications, because of the fact that, regardless of the width, number of rolls, and diameter, each roll is wound on an individual shaft as a single roll. This winder is ideal for winding heavy-weight papers and boards, and such products as saturated flooring.

Moore & White Winders have always been efficient and dependable. Now they've been redesigned to function perfectly in today's high-speed operations . . . to cover the widest possible diversity of applications.

Each Moore & White Winder is equipped with shear cut slitters to insure clean edges to the roll. All moving parts are run in anti-friction bearings. Drives can be mechanical or electrical; either attains a high degree of efficiency.

The two- and four-drum winders may be equipped with such special features as automatic roll ejectors, which allow the roll to be removed from the winder drums without being tended or handled by an overhead crane. The winders may also be equipped with automatic roll unloaders.

Write us today for further information. Our sales engineers will survey your needs promptly and incorporate suitable Moore & White Winders in your set-up for more efficient, profitable operation.

The MOORE & WHITE Company

15th STREET AND LEHIGH AVENUE

PHILADELPHIA 32, PENNSYLVANIA

Represented on the West Coast by Dan E. Charles Agency, 618 Jones Building, 1331 Third Ave., Seattle 1, Washington

CUSTOM-BUILT MACHINES FOR MAKERS OF PAPER AND PAPERBOARD

age may prevent the evolution of hydrogen, also the union of the hydrogen with oxygen as fast as it is formed to produce water. The formation of insoluble films on the metal may stop further action. This is one argument against keeping metal surfaces too clean.

Certain metals like stainless steel and nickel alloys are quite resistant to acid corrosion and are therefore used in many places in the paper mill where acid waters are being handled, such as stock screens, filter facings, and headbox slices.

Oxidizing Agents

As mentioned above, the evolution of hydrogen during corrosion is not detected because it unites with oxygen to form water. It will be seen that, if the conditions are satisfactory, this type of corrosion would proceed much more rapidly in the presence of an oxidizing agent. For this reason, waters high in dissolved oxygen are very corrosive. It also explains why corrosion is much more rapid at the water line in a vessel since the concentration of oxygen is greater in the surface film than in the rest of the solution. This increase in oxygen combined with a greater acidity due to the solution of carbon dioxide in the surface film brings about an increase in the corrosion rate.

This corrosion due to the presence of oxidizing agents may, with some metals, actually retard the rate of corrosion due to the formation of oxides which protect the surface from further corrosion. This is true of metals like aluminum, magnesium, and chromium. This property of chromium is responsible for the principal corrosion resisting characteristics of the stainless steels. This same protective property may be observed with copper which becomes very resistant to corrosion once a film of oxide has formed on its surface.

Temperature

It is well known that the rate of chemical reaction doubles for every rise of seven degrees in temperature. It is therefore apparent that the rate of corrosion will be materially affected by temperature. Where dissolved oxygen is the important factor in corrosion, temperature has an important secondary effect since the solubility of oxygen decreases with a rise in temperature. However, the lowering of the oxygen content of the water may increase the rate of corrosion of some metals such as stainless steel if they depend on a layer of oxide to protect the surface.

In addition to the effect of temperature on the solubility of corrosion products, there may be other effects such as changes in the physical nature or chemical composition of these products which may make them considerably more or less protective. In some cases a rise in temperature may cause a precipitation of a protective coating on the metal surface, as in the formation of scale in a boiler.

Agitation and Erosion Corrosion

The rate of circulation or the velocity of a corrosive solution through a pipe or in a vessel tends to increase the rate of corrosion. This increased rate is due to the fact that a greater quantity of the corrosive solution is brought into contact with the corroding surface during a given period of time. Also, the products of corrosion are washed away as fast as they are produced and therefore a fresh clean surface is continuously being exposed for attack. The products of corrosion which frequently build up and place a protective layer over the surface are not permitted to accumulate.

This is particularly noticeable in pump and pipe lines carrying white water. In those parts of the pumps and pipes where the velocity is the greatest, the corrosion is also the greatest. In the paper machine headbox where the flow is the quietest, the corrosion is the least and in the slice mouth where the velocity is the greatest, the corrosion is the greatest.

Galvanic Corrosion

When two dissimilar metals are in contact with one another in the presence of an electrolyte, an electric current is generated by the two metals in contact and flows from the less noble to the more noble metal. The magnitude of the current depends on the rate of corrosion of the less noble metal. The less noble metal corrodes at a much faster rate than the nobler metal.

This is probably one of the most insidious forms of corrosion and one of the most common met with in industry where pieces of equipment are constructed of different metals and even within the same piece of equipment different metals are used. A good example of this is pumps with iron shells and bronze runners and paper machines with copper wires, brass breast rolls, and iron frames.

It is possible to set up a table that will indicate the tendency of metals and alloys to form a galvanic cell if brought into contact. The table given below is compiled from knowledge of the galvanic behaviour of the metals and alloys. This table is not to be confused with the Electromotive Series Table given above.

In this series, all metals that are grouped together have no strong tendency to form a galvanic cell and so are relatively safe to place in contact with each other. However, the coupling of metals from different groups will form galvanic cells and will result in the accelerated electrochemical corrosion in the metal higher on the list. The farther the metals are apart on this table, the more severe will be the corrosion. This corrosion rate may be greatly increased if a small area of anodic metal is in contact with a large area of a more noble metal. In this case, rapid failure may occur. On the other hand, a film of oxide between two dissimilar metals will frequently insulate the metals to such an extent as to almost eliminate galvanic corrosion.

TABLE II

Galvanic Series of Metals and Alloys

CORRODED END (Anodic or Least Noble)
Magnesium
Zinc
Aluminum 2S
Cadmium
Aluminum 17ST
Steel or Iron
Cast Steel
13% Cr. Iron (Active)
Ni-Resist
18-8 Chromium-Nickel-Iron (Active)
18-8-3 Chromium-Molybdenum-Iron (Active)
Chlorimet 3
Hastelloy C
Lead-Tin Solder
Lead
Tin
Nickel (Active)
Inconel (Active)
Hastelloy A
Chlorimet 2
Hastelloy B
Brasses
Copper
Bronzes
Copper-Nickel Alloys
Monel
Nickel (Passive)
Inconel (Passive)
Chromium-Iron (Passive)
18-8 S (Passive)
18-8 S Mo. (Passive)
Silver
Gold
Platinum
PROTECTED END (Cathodic or Most Noble)

It will be seen that it is very important to consider carefully the choice of materials in the construction of such equipment as pumps and piping for white water systems.

It is always good practice to remove the dissolved oxygen from boiler feed water, especially where high pressure steam is being used, since the oxygen may cause severe pitting of pipes and any iron surface at the elevated temperatures. Where steam is generated in electric boilers, great care should be taken to see that the electrodes are kept free of blisters and that no opportunity for arcing may occur. Dirty electric boilers permit conditions to be set up which cause an electrolysis of the water. Steam rich in oxygen from this source will corrode valves and pipe lines very rapidly, besides creating explosion hazards in paper machine dryers.

Around the paper machine, the pumps and piping handling fresh water do not present the problem that the white water system presents. Here conditions are set up which may cause severe corrosion. On the addition of alum to the stock, aluminium hydroxide and sulphuric acid are formed by hydrolysis. The aluminium hydroxide is adsorbed onto the fibre and the sulphuric acid drains off with the white water. Where the white water system is closed, the acid content builds up

to a point where it is highly corrosive.

Besides the sulphuric acid, which maintains the white water at a pH of under 5, the white water contains pigments. The presence of lithopone, zinc hydrosulphite, and titanium in the white water at this low pH may present a serious corosion problem in pumps with bronze runners and in vacuum pumps.

Due to the fact that the best running conditions on the paper machine are at a pH of around 4.8, which is a condition conducive to corrosion, it has been the custom in the past to use wood wherever possible, wood stock flumes, wood headboxes, and wood stave pipes. This reduced the chance of corrosion but increased the amount of dirt in the stock, due to the fact that slime builds up so readily on wooden surfaces.

Recently, non-metallic protective coatings, over a metal base, have been used very successfuly in the paper mills. These protective coatings are prepared from thermoplastic and thermo-setting resins and natural and synthetic rubbers. Probably the most widely used coating is phenol formaldehyde. This thermo-setting resin is highly resistant to erosion and corrosion and will withstand high temperatures. Stock lines coated with phenol formaldehyde have proven very satisfactory as the protective coating reduces corrosion, reduces friction loss when pumping stock and the pipes remain clean since they do not grow slime. One mill reports that coating a Nash pump with a phenolic resin has eliminated corrosion problems and reduced the power consumption by 25% due to the lower friction loss with this type of coating.

The selection of these protective coating materials is now so large that given a corosive condition, whether it is acid or alkali, a protective coating can be applied that will prevent corrosion.

Old machines currently being rebuilt are having their stock inlets and headboxes lined with Neoprene. The Bird screens, perforated rolls, white water lines, and white water trays are all being lined with phenolic coatings. These protective coatings will not only prevent corrosion but will tend to maintain a cleaner stock system, free from slime.

Probably the greatest amount of corrosion around the paper mill is caused by condensed moisture. Because water is the medium for conveying pulp to the paper machine and for forming the sheet on the wire, there is considerable dampness in the beater room and in the basement. Around the paper machine, the water being driven out of the sheet on the dryers condenses on any metal surface having a slightly lower temperature. This excessive moisture naturally causes corrosion of exposed iron surfaces whether they be piping or the machine hood. Iron piping throughout the paper mill can be protected with a coat of paint. The pipes should be cleaned before painting, otherwise corrosion goes on and eventually the paint scales off exposing a new surface to further attack.

Paper machine hoods and side curtains were formerly constructed of sheet iron. At the elevated ten.peratures over the dryers and the high moisture conditions existing, it was difficult to keep the surfaces protected with the result that they were usually in an advanced state of disintegration. The sheet iron was replaced with asbestos board. There was not the same tendency for moisture to collect on this material and it did not corrode with the moisture as did the iron. In recent years, non-corrosive metals such as monel and aluminium have been used. These metals have the added advantage of not having to be painted. However, the frames of the hoods are still made of iron and they must be carefully protected with paint or the frame will need replacing in a very short time.

Most paper mills have windows with metal frames. Frequently these do not get the attention that the paper machine does, with the result that the sash soon rusts out and has to be replaced. Careful painting will prevent this. Some mills are replacing these iron frames with frames made from some of the newer non-rusting alloys.

In recent years, much information has been published on corrosion and many valuable tables have been compiled listing the proper materials to be used under various corrosive conditions. It is well worth the time spent to consult this informtion when installations are contemplated for handling corrosive materials. It is not that information on corrosion is not available, but that it is not consulted enough.

References

1. Corrosion Handbook: H. H. Uhlig; John Wiley & Sons.

2. Corrosion: F. L. LaQue; Pulp & Paper Magazine of Canada; 49, No. 5:81-94 (April 1948).

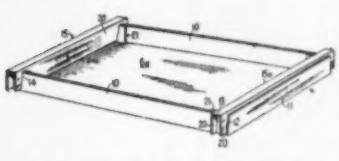
3. Galvanic Corrosion: H. P. Godard; Chemistry in Canada; Vol. 2, No. 4, (April 1950).

Patent Abstracts

● ***In addition to abstracts on the technology of pulp, paper and related industries, miscellaneous abstracts which may provide useful information are included.***

United States

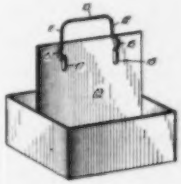
2,511,189—Drip Tray. William W. Woodward, Baltimore, Ohio, assignor to The Fairfield Paper and Container Company, Baltimore, Ohio. Filed August 23, 1949. Issued June 13, 1950.



A drip tray or the like formed from paperboard or similar material comprising a flat bottom having upstanding peripheral walls disposed in angular relationship, adjacent walls being provided with overlapping portions at their corners, and a separate locking member extending along one of the adjacent walls, said locking member having a portion at each end which interlocks with the overlapping corner portions of two adjacent walls to connect them together and hold them in upstanding position.

2,511,317—Handle for Bottle Carrying Containers. Edwin L. Arneson, Morris, Ill., assigner to Morris Paper Mills, Chicago, Ill. Filed July 7, 1948. Issued June 13, 1950.

A handle for a bottle carrier or like container comprising a length of flexible stock shaped to provide a longitudinally extending gripping portion and a pair of generally coplanar legs offset downwardly from said gripping portion, each of said legs terminating in a U-shaped upwardly opening hight which is engageable with said carrier, said hights including portions spaced laterally from said respective legs and each disposed in a plane which generally parallels the plane of said gripping portion and legs, the lateral spacing of said hight portions from said legs at the open throat of the hight corresponding approximately to the lateral spacing of the remainder of the hight portions from said legs, said respective hights being bowed in opposite directions generally paralleling the plane of said gripping portion and legs, so as to enable frictional gripping of said carrier between and substantially throughout the entirety of each of said hights and the laterally adjacent portion of the associated leg.



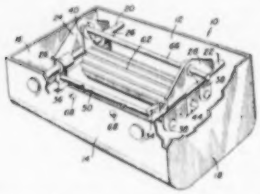
2,511,569—Article Holding Insert for Containers. Stanley H. Davis, Louis F. Middlesworth, and Arthur L. Milstein, Toledo, Ohio, assignors to The S. H. Davis Paper Box Company, Toledo, Ohio. Filed July 2, 1949. Issued June 13, 1950.

A container liner of the class described formed of stiff material and comprising a bottom section and a buffer section at each of opposite edges thereof, one buffer section having an inner wall facing the other buffer section and inclining outwardly from the bottom section, said wall having an opening for receiving the closed end of a receptacle, said other buffer section having an inner wall inclined from said bottom section in overhanging relation thereto and being slotted at its outer edge portion to receive opposite edge walls of the open end of a receptacle that is seated at its closed end in said opening.

2,512,168 — Paper Roll. Robert C. Moore, Long Island City, N. Y. Filed March 8, 1949 — Issued June 20, 1950.

As a new article of manufacture, a web of paper having converging lines of weakness extending longitudinally thereof in spaced relation from the lateral edges of the web and from each other, said web of paper being rolled into a compact roll with the lines of weakness at their maximum spacing at the outer terminus of the web.

2,512,221 — Wallpaper Pasting Machine. Harry A. Bixby, Brattleboro, Vt. Filed January 16, 1948 — Issued June 20, 1950.



A wall paper pasting machine comprising an elongated paste receptacle having side and end walls and an open top, a pivot pin positioned transversely of said receptacle and secured between said side walls adjacent one end thereof, an elongated frame hinged at one end on said pin within said receptacle, a support in said receptacle at the other end thereof, said frame resting upon said support, a paste applying roll journalled in said frame and longitudinally of said receptacle, paper guide bars depending from said frame on opposite sides of said paste roll.

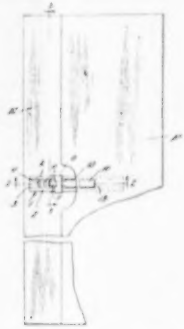
2,512,338 — Preparation of Cellulose Ethers. Eugene D. Klug, Wilmington, and Harold M. Spurlin, Marshallton, Del., assignors to Hercules Powder Company, Wilmington, Del. Filed April 29, 1947 — Issued June 20, 1950.

In the preparation of a cellulose ether by a reaction mixture of alkali and cellulose with an etherifying agent, the improvement which comprises regulating the viscosity of the cellulose ether by introducing into the reaction mixture a predetermined amount of a substance of the group consisting of hydrogen peroxide and metallic peroxides, and a predetermined amount of a salt of a metal of the group consisting of manganese, cobalt, iron and lead, and conducting said reaction in the presence thereof.

2,512,383 — Container for Solid and Liquid Food Products. William A. Ringler, Wayne, Pa., assignor to The Gardner Board and Carton Co. Filed November 10, 1947 — Issued June 20, 1950.

In combination, a fiberboard container capable of being sealed by means of thermoplastic adhesive and having a plurality of enclosing walls in articulation with each other, extensions on these walls also in articulation with each other, said extensions being scored to provide a fin portion and another portion which as to some of the walls is scored diagonally so as to be capable of folding to form a closure of a type resulting in the juxtaposition of the walls in the fin portion, where they may be sealed together, and extending ears, the said fin portion adapted to lie in folded condition with the said ears lying in bent-over condition against adjacent container walls, together with a cover of box-shape having a panel to overlie the top of the container and enclosing wall panels overlying portions of the walls of the container including the said bent-over ears, to protect the closure from mechanical disruption and consequent breaking of the bond, and to maintain the closure in sanitary condition, the said cover members having means for engagement with the said ears to prevent accidental removal of the cover, the said means comprising tuck portions articulated to the walls of the cover and insertable behind the said ears.

2,512,423 — Fastener for Envelopes. Carter B. Gallagher, Clifton Forge, Va. Filed September 23, 1947—Issued June 20, 1950.

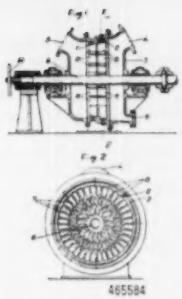


In an expansible envelope comprising a body portion and a flap portion hinged with respect thereto, a latching device for adjustably securing said portions together comprising a strip secured to one of said envelope portions and formed with an elongated guideway, said guideway formed with a plurality of longitudinally spaced transverse depressions, a slide on said strip bridging the guideway, a second strip secured to the other of said envelope portions and having a tongue extending in alignment with the guideway in the first strip, said tongue formed with a depressed part formed to seat in a selected transverse depression in the guideway.

Canadian

465,584—Means for Defibrating and Grinding Paper Pulp or Other Fibrous Material. Cornelius Laviste, Skonsberg, Sweden, assignor to Svenska Cellulosa Aktiebolaget, Stockholm, Sweden. Filed July 15, 1948 — Issued May 30, 1950.

An apparatus for defibrating and grinding paper pulp or other fibrous material comprising a container having a pulp inlet and pulp outlet spaced from each other, at least two defibrating and grinding knife discs mounted in said container across the passage between the pulp inlet and pulp outlet, at least one of said knife discs being rotatable with respect to the other, said knife discs having co-operating confronting working faces consisting of a plurality of knife elements forming a knife system over substantially the entire working face thereof and having axially extending openings therein extending between the knife elements for the axial flow of pulp to be treated through the knife discs in passage from the pulp inlet to the pulp outlet.



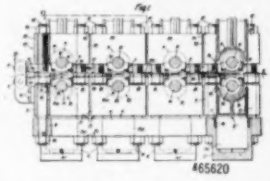
465584

465,599 — Bag Handle Making and Applying Machine. True Maxwell Avery, Glens Falls, New York, U.S.A., and William Henry Bokenkroger, Hudson Falls, New York, U.S.A., assignors to Union Bag & Paper Corporation, New York, New York, U.S.A. Filed April 21, 1948 — Issued May 30, 1950.

In a device of the class described, means for forming a strip of paper into a multiply tape, means for successively severing portions of said tape, means for folding said severed portions to form a handle comprising a central grip portion and end portions, and means for attaching said end portions to a preformed bag.

In a machine of the class described, means for supporting a pair of rolls of paper web, means for feeding the webs through the machine, means for pasting and longitudinally folding each of said strips to form a multiply tape, means for compressing said multiply tapes while the paste is moist, a pair of handle folding devices, means for feeding said tapes to said handle folding devices respectively, means for severing portions from said tapes simultaneously, said handle folding means comprising means for folding said severed portions of the tapes along diagonal fold lines into a central grip portion, and angularly disposed end portions, means for applying paste to parts of said end portions, means for feeding preformed bags between said handle folding devices, and means associated with the handle folding means for applying the pasted portion of the handles to the opposite sides of a bag respectively.

465,620—Machine for Pressing Sheet Material. Robert Case Dennison, Manchester, Connecticut, U.S.A. Filed July 28, 1947. Issued June 6, 1950.

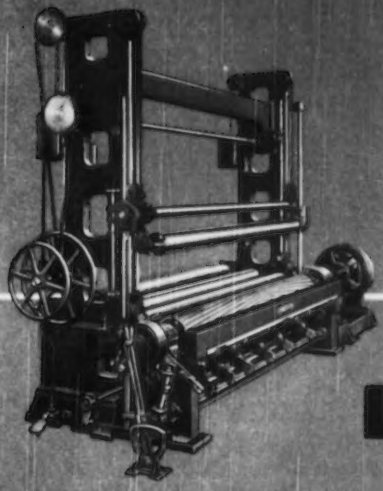


465620

In a pressing machine, in combination a set of roller couples, each roller having a series of collars separated by circumferential spaces, the collars of the rollers that form each couple being disposed in registering relation so that the work web or sheet is compressed along a series of stripes by each roller couple, and unyielding bearings rigidly supporting the rollers at their ends and in the spaces between adjacent collars, the

variations in a VARA

A Mexican two varas tall would be a five-footer but a two-vara Portuguese would measure over seven feet! Compare the Langston Slitter and Roll Winder with any other—you'll find it's a "seven-foot" value. Samuel M. Langston Company, Camden, New Jersey.



SLITTERS

Langston

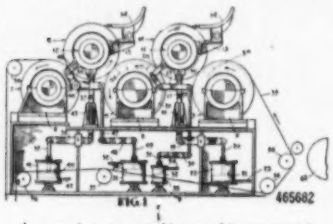
ROLL WINDERS

roller couples being disposed in complementary relation so that the entire work sheet or web is compressed by their conjoint action.

In a pressing machine, in combination, a pair of roller couples, each roller having a series of collars separated by circumferential spaces, the collars of the rollers that form each couple being disposed in registering relation so that the web is compressed by each couple along a series of stripes representing substantially half the total width of the web, unyielding bearings rigidly supporting the rollers at their ends and in the spaces between adjacent collars, the roller couples being disposed in complementary relation so that the entire web is compressed by their conjoint action.

A pressing machine comprising, in combination, a roller couple including upper and lower rollers having series of co-operating collars separated from one another by bearings, a rigid upper bearing block in which all the bearings of the upper roller are rotatably secured in axial alignment with one another, a rigid lower bearing block in which all the bearings of the lower roller are rotatably secured in axial alignment with one another, power mechanism for urging one of the bearing blocks toward the other, said other bearing block being held firmly in a predetermined position against pressure exerted from the first through the rollers, and stop mechanism for limiting movement of the first bearing block toward the other to determine the uniform thickness to which the web will be compressed by the collars.

465,682 — Press for Paper Making Machines. Bernard A. Malkin, Lachine, Quebec, Canada, assignor to Dominion Engineering Works Limited, Lachine, Quebec, Canada. Filed November 27, 1947. Issued June 6, 1950.

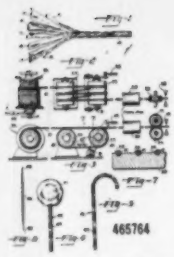


A press for paper making machines comprising a base, three bottom press rolls arranged on said base in laterally spaced relation to each other, a pair of top press rolls arranged on the bottom press rolls in staggered relation thereto so that each top roll lies between and is supported on two adjacent bottom rolls, the arrangement being such that the intermediate bottom roll partially supports each of the two top rolls, the intermediate bottom roll being a suction roll having circumferentially spaced first and second suction areas, the first suction area being located just behind the nip provided by the intermediate bottom roll and the first of the two top rolls supported thereon, the second suction area being located just in advance of the nip between said intermediate bottom roll and the second of the two top rolls supported thereon.

A press as set forth in claim 1, in which the first bottom roll is a suction roll having a suction area located close to and forwardly of the first nip of the press.

465,704 — Cellophane Stick and Method of Making Same. Harry E. Davis, Akron, Ohio, U.S.A. Filed October 15, 1949 — Issued June 13, 1950.

A method of making a rod-like article of manufacture which comprises twisting a plurality of ribbons of non-fibrous regenerated cellulose to form a flexible strand, each of said ribbons being coated with a heat-activable adhesive, thereafter



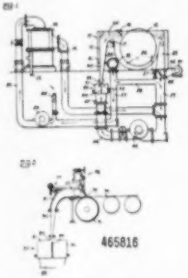
placing the flexible strand in longitudinal tension, thereafter subjecting the tensioned strand to the action of heat in order to activate the adhesive and cause adherence between said ribbons and to compact the strand, and finally cooling the strand to set the adhesive while maintaining the strand in longitudinal tension.

A method as set forth in claim 1 wherein the flexible strand is continuously moved under tension during the application of heat to the strand and the subsequent cooling thereof.

465,778 — Combined Cigarette and Match Package. James Anthony Morell, Toronto, Ontario, Canada. Filed April 29, 1947 — Issued June 13, 1950.

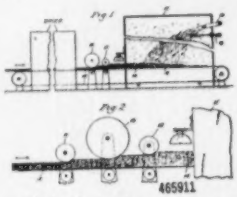
A combined cigarette and match package comprising an outer casing, an inner cigarette container slidable within the outer casing and adapted to be pushed out of the outer casing to remove cigarettes therefrom, an end closure flap foldable beneath the casing when the inner container is within the outer casing and adapted to be folded back to open the container and permit removal of cigarettes therefrom when the container is pushed out of the casing, and a strip of paper matches connected to the underside of the closure flap and lying therebeneath whereby when the closure flap is inserted within the outer casing the matches are contained within the container and when the closure flap is turned back to permit removal of cigarettes the matches are made available for use.

465,816—Paper Machinery. Stephen A. Staege, Hamilton, Ohio, U.S.A., assignor to The Black-Clawson Company, Hamilton, Ohio, U.S.A. Filed July 15, 1947 — Issued June 13, 1950.



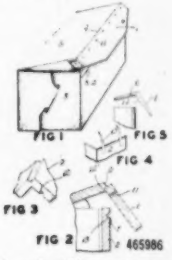
In a stock supply system for a paper making machine including a forming member, the combination of a stock inlet passage substantially equal in lateral extent to said forming member for delivering stock directly to said forming member, means including a conduit having a discharge orifice of substantially the same lateral extent as said inlet passage for supplying stock to said inlet passage at a pressure sufficient to provide a flow of stock through said orifice at a definite and substantially uniform velocity across the width of said passage, said inlet passage including a portion contiguous with said orifice and having its walls relatively diverging at a small angle away from said orifice to provide with said orifice a venturi for dissipating with minimum turbulence the velocity energy of said stock entering said passage through said orifice, said passage continuing with substantially undiminished effective flow area up to the forming zone of said forming member to convey said stock in substantially uninterrupted flow from said orifice to said forming member with minimum turbulence and flocculation, said angle of divergence between said passage walls being below a predetermined critical value to maintain said stock between said orifice and said forming zone in continuous motion towards said forming member at a decelerating velocity which is substantially constant across each cross-sectional area of said passage.

465,911—Manufacture of Fibre Felts. Henry E. Walter, Cloquet, Minnesota, U.S.A., assignor to Wood Conversion Company, St. Paul, Minnesota, U.S.A. Filed December 24, 1946—Issued June 13, 1950.



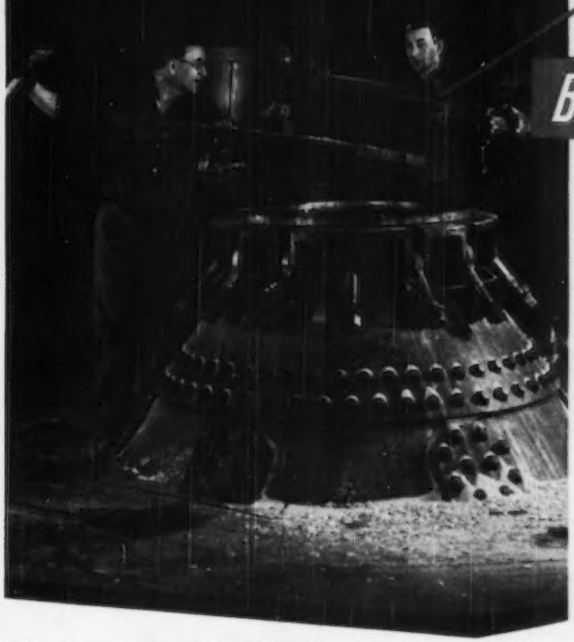
The method of forming a porous resilient bonded wood fibre blanket-like felt, which comprises continuously forming a substantially uniformly thick and substantially unfelted mat of fibres carrying aqueous liquid binder-material to provide bonds upon drying, said fibres being cellulosic fibres derived from wood and in substantially individualized ultimate fibre form, subjecting said mat to a series of densifying compressions of increasing magnitude and releases therefrom to effect felting of said fibres in each compression and rearrangement of felted fibres in each release from compression, each compression being limited to forming a porous blanket subject to additional compression toward its maximum density, and drying the finally released mat to provide bonds for the resulting rearranged fibres.

465,986 — Pull-Tab Style Folding Carton. William A. Paulder, Winnipeg, Manitoba, Canada, assignor to Dominion Envelopes & Cartons (Western) Limited, Winnipeg, Manitoba, Canada. Filed August 30, 1947 — Issued June 20, 1950.



In pull-tab style folding cartons, wherein the tab is coterminous with the front edge of the cover and is adhesively secured to the front wall of the carton, the provision of a scored line or the equivalent on the material of said carton, parallel with and adjacent the upper edge of the front wall thereof when the carton is regarded as closed, and above the locus of adhesive attachment of said tab to said front wall for the purpose herein specified.

For *BEST* performance from your Stainless Steel equipment . . .



COVER LINER, top strainer, top sleeve, valves and piping of this big digester are Stainless Steel. The equipment is installed at the South Brewer Pulp Mill of the Eastern Corporation, Bangor, Me.

you must use the grade of Stainless *BEST* suited to the job

WALK THROUGH a modern paper mill. It's like walking through a display room of Stainless Steel. For seldom will you find Stainless used in more different forms and in more different *analyses* than in paper making.

You'll see one grade of Stainless Steel used in the sheets for digester linings. Other grades in the Stainless pipe and tubing heat exchangers, evaporators and cooking liquor lines. Still other analyses of Stainless in the long-wearing plates for blow-pit bottoms, in the tough bars for Jordan machines, in the wire and rods that go into cylinder molds, pulp washer rolls and save-alls.

And because conditions vary from mill to mill—due to the different acid concentrations, temperatures, pressures and operating procedures used—even similar applications often call for entirely different types of Stainless Steel. Always, the type of Stainless used is determined by the job it has to do.

That's why it is important to use *U·S·S* Stainless Steel—and to get the assistance of our Stainless Steel engineers in its selection.

The fact that U·S·S Stainless Steel—a perfected, service-tested material—is available in many different analyses and in the most complete range of forms, sizes and finishes, makes it possible for us to give you *exactly* what your operating conditions call for.

In this way you can be sure of getting the *maximum* return from your investment in Stainless Steel construction—top performance from your equipment, longer service life, low maintenance and fewer replacements. It will pay you to bring your requirements to Stainless headquarters.

THIS BLOW-PIT BOTTOM, covering a 450-square foot area, is constructed of perforated Stainless Plates. Many of these plates have been in use at the South Brewer Mill for 16 years without showing appreciable signs of wear.

AMERICAN STEEL & WIRE COMPANY, CLEVELAND · CARNEGIE-ILLINOIS STEEL CORPORATION, PITTSBURGH
COLUMBIA STEEL COMPANY, SAN FRANCISCO · NATIONAL TUBE COMPANY, PITTSBURGH · TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM
UNITED STATES STEEL SUPPLY COMPANY, WAREHOUSE DISTRIBUTORS, COAST-TO-COAST · UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS

U·S·S STAINLESS STEEL

SHEETS · STRIP · PLATES · BARS · BILLETS · PIPE · TUBES · WIRE · SPECIAL SECTIONS

O-1611

UNITED STATES STEEL

ASSOCIATIONS

O. W. CALLIGAN

Calligan Heads Michigan Supts.

KALAMAZOO, Mich. — Olin W. Calligan of Edgar Brothers Co. was elected chairman of the Michigan Division of the American Pulp and Paper Mill Superintendents Assn. He succeeds William F. Hathaway of Kalamazoo Vegetable Parchment Co.

Other officers elected included Richard H. Peeters, St. Regis Paper Co., first vice-chairman; and Harvey M. Hamilton, Allied Paper Mills, secretary-treasurer.

Napkin Assn. Fall Meeting

NEW YORK—Notices have been sent to all members of the paper napkin industry announcing the fall meeting of the Paper Napkin Assn., Inc., to be held at The Homestead, Hot Springs, Va., on September 25 and 26.

Annual Meeting of N.P.B.M.A.

PHILADELPHIA, Pa. — The 33rd annual convention of the National Paper Box Manufacturers Assn., Philadelphia, will be held June 3-6, 1951, at Haddon Hall, Atlantic City. Theme of the meeting will be "A Third of a Century of Progress in the Setup Paper Box Industry."

Gustav L. Nordstrom, executive secretary, and Harry Edwin Roden, director of publicity and promotion of the association, have completed the hotel arrangements. There will be an exposition of setup paper boxes in one of the large halls of the hotel adjoining the business meeting room.

The annual meeting of the National Paper Box Supplies Assn., New York, will be held at the same time, also in Haddon Hall.

International Trade Fair At Chicago

CHICAGO, Ill. — The First United States International Trade Fair is to be held in Chicago, August 7 to 20.

A.S.T.M. Elects Markwardt

MADISON, Wis. — L. J. Markwardt, assistant director, U. S. Forest Products Laboratory, Madison, was elected president of the American Society for Testing Materials at the Society's 53rd annual meeting in Atlantic City, N. J., the week of June 26.

2d Plant Maintenance Show

NEW YORK—The Plant Maintenance Show, which drew industrial executives from 35 states and many foreign countries when it was conducted for the first time early this year, will be held again at the Auditorium, in Cleveland, Ohio., January 15-18, inclusive.

Also to be repeated will be the Plant Maintenance Conference which attracted approximately 1,500 engineers and executives, one of the largest attendances recorded at technical sessions of this type. L. C. Morrow, consulting editor, *Factory Management & Maintenance*, will serve as chairman.

Northeastern Superintendents Meet

Arthur J. Brosius, Brown Co., Berlin, N. H., as chairman of the Northeastern Division of The American Pulp and Paper Mill Superintendents Assn., Inc., has announced some of the features of the 1950 fall meeting of the Division. This meeting is to be held at Poland Spring House, Poland Spring, Maine, on September 22-23. However, the Division has set aside the evening of the day before, Thursday, September 21, both for registration and an informal gathering for early arrivals. There will be dinner that night in the main dining room.

The formal program takes up a morning and an afternoon session on Friday, September 22.

The morning session, opening at 9:30, with Mr. Brosius presiding, will open with the showing of a movie covering the woods operation of the Brown Co. C. S. Herr of Brown will serve as narrator for the showing.

Dr. Geoffrey Broughton, head, Paper Engineering Department, Lowell Textile Institute, Lowell, Mass., will address the meeting on the New Paper Course at Lowell Textile Institute. His talk will be illustrated with lantern slides.

The morning session will conclude with another Brown Co. movie. This film covers the subject of Safety First. Its narrator will be J. C. Rodgerson, also of the Brown staff.

The afternoon sitting will be given over to a general discussion on mill problems. It is the desire of the Division officers to have many questions placed in the Headache Box for consideration at this meeting. They don't say that they will have the answers for all of them; but they do promise the best information that they can give for every question that is discussed.

J. R. Almand, Brown Co., is to be the moderator for this "reaching for help" sort of meeting.

Following this discussion period, there will be a business meeting at which time officers for 1950-51 will be elected.

FORESTRY

Bankers Show Interest In Forestry

PENSACOLA, Fla. — Sixty bankers of Western Florida showed their interest in the upbuilding of Florida's forests at a one-day meeting which included inspection of new and old trees in Santa Rosa and Escambia counties on July 19. The bankers were entertained by the St. Regis Paper Co. at a barbecue lunch.

France Seeks Seedlings From Alabama

MONTGOMERY, Ala. — Alabama State Forester J. M. Stauffer was recently in receipt of a request from Monsieur J. Pourtet, National School of Waters and Forests inspector, Nancy, France, for seeds to replenish French forests which were hit by disastrous fires last fall.

Foresters' Golden Anniversary

WASHINGTON, D. C. — The Golden Anniversary meeting of the Society of American Foresters, commemorating the founding of that organization in 1900, will be held in Washington, D.C., December 13 to 16.

First general session, to open at the Mayflower hotel on December 14, will have as its theme, "The Society Takes Stock." The final general session on December 16 will center on "The Society Looks Ahead."

North Dakota Dedicates Tree Farms

Forty farmers were awarded Tree Farm certificates June 29 at Fessenden, N. D., in the state's second Tree Farm dedication. The meeting was held in conjunction with the North Dakota Flying Farmers and Ranchers convention.

All Tree Farms certified were of the shelterbelt variety. North Dakota, one of 28 states with Tree Farm programs in operation, was the first to certify shelterbelt woodlots. Like all Tree Farms, shelterbelts must be managed in accordance with sound forestry practices.

Charles A. Gillett, managing director of American Forest Products Industries, Washington, D. C., national coordinator of the Tree Farm program, pointed out that there are now close to 2500 Tree Farms in the United States covering nearly 21 million privately-owned acres of well-managed forests. Mr. Gillett was North Dakota's first farm forester, serving in that capacity from 1925 to 1928.

The North Dakota Tree Farm program is sponsored by the North Dakota School of Forestry and the State Farm Forestry Committee.

PULP

Perkins-Goodwin Co.

Established 1846

30 ROCKEFELLER PLAZA, NEW YORK

CHICAGO, ILLINOIS · LUFKIN, TEXAS · STOCKHOLM, SWEDEN

PAPER

Skyscrapers were built for the same reason!

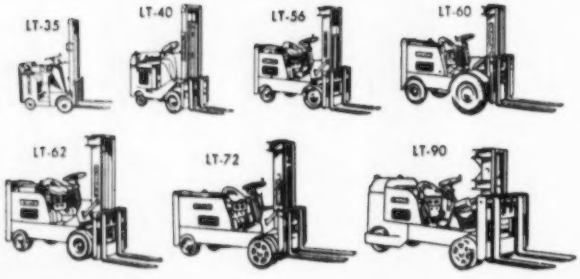
High cost of ground area made it far cheaper for skyscrapers to go *up* instead of spreading out. Towmotor HIGH STACKING offers the same cost-saving opportunity to industry. Towmotors stack *ceiling-high*, save valuable warehouse space, free floor areas for needed production lines. Cut production costs, increase profits—write for "Handling Materials Illustrated." Towmotor Corporation, Div. 17, 1226 E. 152nd St., Cleveland 10, Ohio. Representatives in all Principal Cities in U.S. and Canada.

"THE ONE MAN GANG"

See this 30-minute sound movie on Materials Handling right in your office. Write for details.

TOWMOTOR
THE ONE-MAN-GANG

FORK LIFT TRUCKS and TRACTORS



7 OF THE 12 STANDARD MODELS FOR HANDLING 1500 TO 15,000 LB. LOADS

Camp To Teach Forest Conservation

The pulpwood industry, through the Southern Pulpwood Conservation Assn., for the fifth consecutive year is providing one week camp where the care and wise use of forest trees will be taught to farm boys from nine southern states.

At the camp the boys not only learn good forest practices, but they learn the association of the forest with their everyday lives and the important bearing it has on their economic and cultural future. The pulpwood industry believes that such a forestry message will encourage improved forest practices and that its contribution to the forestry training program for farm youth in the South is a wise investment in the prosperity of the region which depends so largely upon the forest resource.

This year's association-sponsored camp in Georgia will be administered by State Forester Guyton DeLoach and will be held July 30 through August 5 at Franklin Roosevelt State Park near Chipley (Ga.). Approximately 70 boys from the northern half of the state will attend. The following pulpmills, all members of the Southern Pulpwood Conservation Assn., will finance this year's project: Brunswick Pulp & Paper Co., Macon Kraft Co., Southern Paperboard Corp., and Union Bag & Paper Corp.

Forest Management Regulations

VANCOUVER, B. C. — Publication of the second edition of 10,000 copies of a forest management booklet has just been completed by the British Columbia Department of Lands and Forests, Forestry Service Division.

Chief Forester D. R. Orchard said the provincial government had issued five forest management licenses now operating, with about 12 pending and other firms seeking information. About two years of survey work is required before a license is granted for operation.

The smallest management now operating is about 1,250,000 feet with the largest about 75 million feet.

The booklet showed that B. C. has 234,403,000 acres of land and inland water, but only about two percent of this arable. The forest lands total 75 million, about 30 percent of the whole.

An estimated 40 billion cubic feet of timber is left in the province.

The forest management license scheme, passed in the Legislature in 1947, had as some of its more important objectives sustained yield management of forest lands to produce the greatest possible return in wood and national wealth. It was also for stabilization and perpetuation of industry and communities, closer utilization of forest crops, and perpetuation of forest resources.

Managements now operating are required to be inspected by a forester at periodical times throughout the year.

Champion Pulpwood Buying Yard

SALISBURY, N. C.—Announcement is made by G. C. King, an official of the Champion Paper & Fiber Co., Canton, that his firm will open a pulpwood buying yard here September 1, with F. J. Cook as manager.

Mr. Cook, who resides at Albemarle, currently is associated with the Southern Pulpwood Conservation Assn.

Officials of Champion Paper have conservatively estimated that the company will spend anywhere from $110,000 to $200,000 a year for pinewood from farmers in this area, Mr. King stated.

SUPPLIERS

Soda Ash And Caustic Soda Output

WASHINGTON, D. C.—Domestic production of soda ash and caustic soda was higher in May than for the previous month in latest figures reported by the Bureau of Census.

In short tons, May and April, respectively, soda ash production was reported as follows: ammonia soda process, total, wet and dry, 388,169 against 361,328; natural, 20,850 against 19,487.

Caustic soda output, May and April respectively, was reported as follows: in short tons—

Electrolytic—liquid, 170,477 against 163,039; solid, 31,085 against 27,211.

Lime soda—liquid, 49,164 against 47,305; solid, 13,985 against 12,641.

Beloit Iron Works announces that E. D. Beachler has been appointed chief engineer. Additional changes in the executive engineering staff were made through the appointment of Lon Neese and Sterling Skinner as assistant chief engineers.

Bristol Co. reports that R. M. Brown, formerly sales engineer with the Bristol Co. of Canada, Ltd., and lately instrumentation engineer with Stadler Hurter & Co., Montreal, consulting engineers, has rejoined The Bristol Co. He will be stationed at Baltimore, Md. Mr. Brown is well known in instrument circles and is the author of several papers on the application of instruments in the pulp and paper industry.

THE H. K. FERGUSON COMPANY

PAPER MILL ENGINEERS & BUILDERS

Complete Service for Design, Construction, Equipment Installation, Engineering Reports and Surveys

Executive Offices
Ferguson Building, Cleveland

District Offices

19 Rector St., New York; M. & M. Bldg., Houston; 120 S. La Salle St., Chicago; 2975 San Fernando Road, Los Angeles; 21 E. 12th St., Cincinnati

DR. H. R. McCLEARY

American Cyanamid Co., Calco Chemical Division, Bound Brook, N.J., has announced the appointment of Dr. H. R. McCleary as sectional director, Application Research Department.

Blaw-Knox Co., Chemical Plant Div., has been awarded a contract by Mathieson Hydrocarbon Chemical Corp., of Baltimore, Md., for the engineering and procurement of a large new chlorine and caustic soda plant to be located at Saltville, Va. Expected to go into operation in 1951, the design of this new chlorine production unit will be based on the Mathieson mercury cell process, which produces chlorine and rayon grade caustic soda of 50 percent concentration directly from the cells.

Chemical Linings, Inc., 500 Trust Company Building, Watertown, N. Y., announces the appointment of S. A. Salmonson as exclusive Pacific Coast representative with sales and service organization located at 907 Terminal Sales Building, 1220 S. W. Morrison street, Portland 5, Ore.

Diamond Alkali Co. has named Dr. L. P. Seyb, since 1942 a chemist and group leader in the Research Department, manager of research. He succeeds J. E. Underwood, who relinquishes the post he has held for the past six years to become a research consultant for the company. This announcement was made by C. C. Braumbaugh, Diamond's director of research and development.

Author of many technical papers, Dr. Seyb also is a member of many professional organizations, including the American Chemical Society; Alpha Chi Sigma, national chemical fraternity; Phi Lambda Upsilon, national honorary chemical society; and Sigma Xi, national honorary scientific society.

Mr. Underwood enters the consulting field with a distinguished record in chemistry and physics compiled over a number of years, including six with Diamond as its manager of research.

Mr. Underwood is affiliated with a number of professional organizations, among them are the American Assn. for the Advancement of Science, the American Chemical Society, the American Institute of Chemical Engineers, the Society of Chemical Industries of Great Britain, the London Chemical Society, and the Rittenhouse Astronomical Society.

Hercules Powder Co.'s Synthetics Department announced the following appointments: Henry Thouron, director of sales; B. H. Little, district sales manager of the department's Boston branch office; Howard C. Bates, special sales representative in New England.

J. M. Huber Corp. has announced the company's decision to erect a new furnace carbon black plant near Baytown, on the Gulf Coast of Texas. It is expected that the plant will be completed by March 1, 1951, and will cost $1,500,000. Its annual capacity will be 30 million pounds HAF type carbon black.

F. C. Huyck & Sons named William Greeley, treasurer since 1948, a vice-president at a regular meeting of the Board of Directors on June 19, 1950. Mr. Greeley joined F. C. Huyck & Sons in 1920. After serving a short time as assistant to the head of the Cost Department, he became a sales representative in the papermakers' felt field covering the New England and Middle Atlantic States. In 1930 he became felt sales manager which position he held until his election as treasurer.

Roderick T. Clarke, secretary of the company, was elected secretary-treasurer, and Charles W. LaDow, credit manager, was named assistant secretary and assistant treasurer.

Industrial Brownhoist Corp., Bay City, Mich., recently announced the opening of a sales office in Pittsburgh for the convenience of customers in the Greater Pittsburgh area. The office, 1422 Oliver Building, phone—Atlantic 1-4739, will be under the direction of J. A. Peppard, district manager of the Pittsburgh, Cleveland territory.

David E. Long Corp., composed of experienced technical sales specialists, engineers, and chemists, has been formed to make and sell corrosion-abating materials and systems, and to provide practical solution to specific problems. Materials offered include a comprehensive line of specially formulated protective coatings.

National Lead Co. will begin construction immediately of new facilities for production of titanium pigments. The additional capacity, expected to increase the present rate by 60,000 to 70,000 tons annually, will be added first at the company's St. Louis plant. Depending on reasonably prompt delivery of the necessary equipment, first production will be realized from the new

facilities within a year and full production within eighteen months.

Newport News Shipbuilding & Dry Dock Co. of Newport News, Va., has announced the appointment of the Whitty Engineering Co., 10 High street, Boston, as its New England sales representative. The Boston concern, headed by W. H. Whitty, will have the complete New England territory, including that of Connecticut east of the Houstanic River. They will represent the Newport News firm in the sale of all of the products of that company with the exception of shipbuilding.

Ponsford-Moos Equipment Co., 516 San Francisco street, El Paso, Texas, has been appointed exclusive sales representative in Panama, Costa Rica, Nicaragua, El Salvador, Honduras and British Honduras for the Eriez Mfg. Co., Erie, Pa., producers of magnetic equipment.

Railway Supply & Mfg. Co., Cincinnati, Ohio, announced the appointment of James T. Flannery Co., with offices at 26 Journal Square, Jersey City 6, N. J., as Eastern sales representative to the paper and plastic fields. Mr. Flannery has been extremely active in this field for many years, and at present is president of the National Assn. of Waste Material Dealers. During the war, Mr. Flannery headed the Waste Paper & Cotton Rag Unit of the OPA. Railway Supply is engaged in the research and development of cotton linters and cotton fibres for the paper and plastics industries.

Rice Barton Corp. has voted a new office of vice-president in charge of engineering. Everett W. Clem, who came with the company in 1925, was appointed to this office. He has been chief engineer since 1935. He is a member of TAPPI, National Society of Professional Engineers, and is also a member of the Committee of National Design of the American Society of Mechanical Engineers. He has been granted numerous patents on pulp and paper making machinery.

Sutherland Refiner Corp. announces that Ray Smythe, who is well known in the pulp and paper industry, has been appointed West Coast agent with headquarters at 501 Park Building, Portland 5, Ore.

United States Rubber Co. has announced the appointment of Nils Walter Swenson as assistant manager of branch sales for the mechanical goods division. Mr. Swenson was formerly manager of mechanical goods sales for the company's Buffalo, N. Y., branch. He will make his new headquarters at the company's New York offices in Rockefeller Center.

United States Rubber Co. will begin work immediately to reactivate the GR-S synthetic rubber plant at Port Neches, Tex., as requested by the Reconstruction Finance Corp. It is expected that the plant will be in operation in about three months.

Wheelco Instrument Co., Chicago 7, Ill., has opened a new sales office in Grand Rapids, Mich., which will cover the state of Michigan, with the exception of Detroit. R. P. Campbell, sales engineer, will be in charge as assistant district manager. The new Grand Rapids office will operate under the supervision of the Detroit district office.

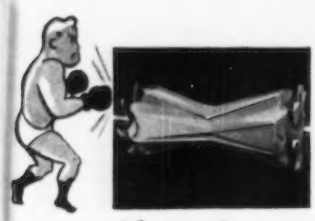
Don C. Walley, formerly sales engineer with the Wheelco Chicago Western Division office, has been appointed St. Louis, Mo., District Manager.

Warren F. Paetz, sales engineer, will take over Don C. Walley's former territory of Central Illinois and Iowa.

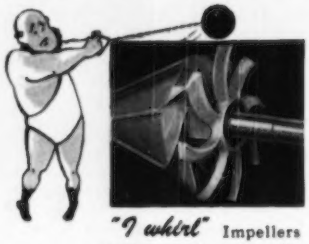
Samuel M. McDevitt, Philadelphia service engineer, has been transferred to the New York Eastern Division office, and Edward F. O'Brien will replace him in the Philadelphia, Pa., district office.

Tom Mitchell, service engineer in New York, has been transferred to the Boston district office.

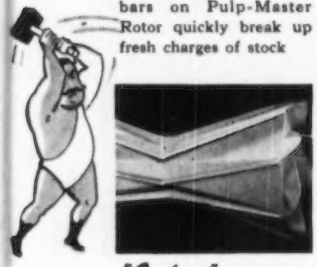
4-way PULPING POWER!



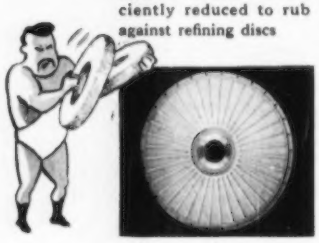
"I pound" Diagonal bars on Pulp-Master Rotor quickly break up fresh charges of stock



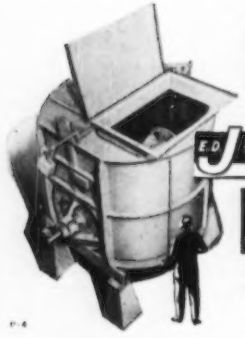
"I whirl" Impellers agitate stock until sufficiently reduced to rub against refining discs



"I slam" Cone shape of Pulp-Master Rotor forces stock violently against sides of tank



"I grind" Refining discs at sides of tank have radial bars against which stock is rubbed by impellers



Not just a swish or swirl, but a pounding, slamming, whirling, rubbing action that completely disintegrates new pulp, waste-paper, machine broke — even glassine and wet-strength — in 10 to 40 minutes.

Four sizes, from 500 to 4000 lbs., at 6½% density. Available for batch or continuous operation. Write for Bulletin EDJ-1019-A—or arrange to see the Pulp-Master in action on your own stock.

E. D. Jones

PULP-MASTER

E. D. JONES & SONS COMPANY • PITTSFIELD, MASS.

BUILDERS OF QUALITY STOCK PREPARATION MACHINERY

FINANCIAL RECORD

	Per Share Earnings		Indic.	July 25
	Calendar Year 1949	12 Mo. to Approx. 3/31/50	Annual Divid. Rate	Approx. Market Price
PREFERRED STOCKS				
Armstrong Cork Co. $3.75 Cum.	$40.95*	$ —	$3.75	$102⅛
Armstrong Cork Co. $4.00 Cum. Conv.	40.95*	—	4.00	109⅜
Celotex Corp. 5% Cum.	6.80c	8.27g	1.00	15⅞
Champion Paper & Fibre $4.50 Cum.	60.09f	82.66	4.50	105½
Container Corp. of Amer. 4% Cum.	89.52	104.60e	4.00	105½
Crown Zellerbach $4.20 Cum.	54.38c	55.88g	4.20	104¾
Dixie Cup Co. $2.50 Cum. Conv. Cl. A	10.93	11.41	2.50	53½
Flintkote Co. $4 Cum.	62.70	65.47	4.00	106⅝
Robert Gair Co., Inc. 6% Cum.	11.48	8.49	1.20	17¾
International Paper Co. $4 Cum.	224.55	235.34	4.00	105
Kimberly Clark Corp. 4½% Cum.	85.27	99.12	4.50	107
Kimberly Clark Corp. 4% Cum. Conv. 2nd	50.65*	58.80	4.00	138
MacAndrews & Forbes 6% Cum.	61.59	62.97e	6.00	142
Mead Corp. 4¾% Cum.	51.37	82.87a	4.25	87¼
Mead Corp. 4% Cum. Conv. 2nd	21.35*	27.76a	2.00	42½
Paraffine Cos. Inc. 4% Cum. Conv.	56.46	47.70	4.00	99¼
Rayonier Inc. $2 Cum.	9.54	10.03	2.00	32⅝
St. Regis Paper Co. 4.40% 1st A	30.74	36.61e	4.40	87½
Scott Paper Co. $3.40 Cum.	51.15*	56.23*	3.40	100¾
Scott Paper Co. $4.00 Cum.	51.15*	56.23*	4.00	107¾
Sutherland Paper 4½% Conv.	46.92	50.62	4.25	106
U. S. Gypsum Co. 7% Cum.	283.37	300.73	7.00	182½
United Wallpaper Inc. 4% Cum. Conv.	2.14	(d)8.00	2.00	24
West Virginia Pulp & Paper 4½% Cum.	61.28c	—	4.50	107⅜
COMMON STOCKS				
APW Products Co.	(d)0.81	(d)0.58	—	4⅛
American Writing Paper Corp.	.04	$0.15	—	7
Armstrong Cork Co.	6.57	—	$3.00	40⅝
Celotex Corp.	1.65c	2.06g	1.00	14⅝
Certain-Teed Prods. Corp.	2.84	3.00	1.00	12⅝
Champion Paper & Fibre	5.15f	7.55	2.00	36½
Congoleum Nairn Co.	3.04	—	2.00	23¼
Container Corp. of America	8.46	9.62e	4.00	48⅛
Crown-Zellerbach	6.02c	6.12g	2.00	36¼
Dixie Cup Co.	7.44	7.85	1.50	36
Eastern Corp.	0.04	0.87	—	14⅛
Flintkote Co.	4.33	5.52	3.50	22⅝
Robert Gair Co., Inc.	1.31†	1.22†	0.70	7⅛
Great Northern Paper Co.	4.87	4.19	2.80	40⅝
International Paper Co.	7.12	7.47	2.50	43¾
Johns-Manville Corp.	4.83	6.16e	2.50	37¼
Kimberly Clark Corp.	5.29	6.19	1.80	34⅛
MacAndrews & Forbes Co.	3.64	3.77e	3.00	37
Marathon Corp.	3.29c	3.56g	1.40	28⅞
Mead Corp.	4.10	5.57a	1.60	20⅜
National Container Corp.	0.95	1.08	0.60	8⅛
Paraffine Cos. Inc.	0.85	0.71	0.60	13⅞
Rayonier, Inc.	4.75	5.06	2.00	32¼
Ruberoid Co.	8.72	9.44	3.25	44½
St. Regis Paper Co.	0.91	1.11e	0.60	8¼
Scott Paper Co.	6.07	6.65	3.60	79⅝
Sutherland Paper Co.	4.62	4.88	2.50	38
Union Bag & Paper Corp.	5.01	5.12	2.25	29⅝
United Board & Carton	(d)1.61b	(d)0.84g	—	9⅛
U. S. Gypsum Co.	13.51	14.35	9.00	91½
United Wallpaper	(d)0.01	(d)0.32	—	2¾
West Virginia Pulp & Paper	8.58c	9.37g	3.00	49½

(a) 12 months to approximately 6/15/50
(b) Year ended 11/13/49
(c) Year ended 1/31/50
(d) Deficit
(e) 12 months to 6/30/50
(f) 9 months to 12/31/49
(g) 12 months to approximately 4/30/50
(*) Earnings per combined preferred shares.
(†) Not including full earnings of Gair Co., Ltd. nor 60% interest of Robert Gair Co., Inc. in Southern Paperboard Corp.

Scott Stock Split

PHILADELPHIA—A two-for-one split of the company's common stock was approved by a vote of the stockholders of the Scott Paper Co.

The issuance of one additional share of common for each share held without changing the stated capital of $12,011,893 was voted. The distribution will be paid to stockholders of record on July 27. At that time the company will have 1,743,694 common shares outstanding.

Nekoosa-Edwards Paper Co., Port Edwards, Wis., unanimously re-elected the board of directors at the annual stockholders meeting held July 19, at the company offices in Port Edwards.

More than 41,000 tons of paper were shipped during the first six months of 1950, against 33,859 tons during the first six months of 1949, Mr. Alexander explained, and there exists a current back-log of approximately two months' production time based on 100 percent of capacity on the current six day operating week. Net profits rose

UNDERWRITERS
DEALERS
BROKERS

Industrial, Utility, Railroad Bonds

Preferred and Common Stocks

•

KIDDER, PEABODY & CO.

Founded 1865

Members
New York and Boston Stock Exchanges and New York Curb Exchange

NEW YORK · BOSTON
PHILADELPHIA · CHICAGO

Sales and Branch Offices

Albany · Newport
Altoona · Providence
Baltimore · Reading
Lowell · Scranton
Minneapolis · Springfield
New Bedford · Wilkes-Barre

New York Teletype NY 1-193

56 percent from $1.63 per share to $2.54 for the first six months, and book value per share was up from $47.78 to $49.85.

The stockholders unanimously elected these active directors for the coming year: John E. Alexander, S. A. Casey, W. A. Radke, C. H. Reese and N. E. Nash, Port Edwards; A. S. Puelicher, Milwaukee; and R. J. Kraut, Fond du Lac, Wis. The directors then re-elected the corporate officers for the coming year.

Container Corp. of America and subsidiaries report for six months ended June 30:

	1949	1950
*Earned per common share	$4.61	$3.45
Sales	66,012,120	55,362,920
Profit after charges	7,685,893	5,822,367
Federal income tax provision	2,920,664	2,212,527
Net profit	4,765,229	3,609,840
Number common shares	990,474	990,474

Quarter ended June 30

	1950	1949
*Earned per common share	$2.41	$1.56
Sales	34,067,855	26,891,924
Net profit	2,490,797	1,635,527

*After preferred dividend requirements.

Consolidated Paper Corp., for the first six months of 1950, reports profit from operations at $11,880,293 compared with $11,470,701 for the corresponding period last year. Income from investments is shown at $101,676 compared with $1,871, making a total of $11,981,969 as against $11,472,573.

St. Regis Paper Co. reports net sales for the first six months of 1950 of $70,937,809, compared with $66,123,269 for the like period of last year. Net income, after provision for Federal taxes, amounted to $4,212,281 against $3,202,888 for the corresponding six-month period of last year.

Seeks To Enjoin GPO

WASHINGTON, D. C. — A District of Columbia waste paper dealer in a court action here is seeking to enjoin the Public Printer of the U. S. from letting a waste paper purchasing contract to another dealer.

Through an action now pending in the District court, Kline Paper Stock Co. is seeking to block the Public Printer's acceptance of a bid by the Thomas Paper Stock Co., also of Washington, to buy GPO waste paper for the next six months, while the competing bid is under study of another government agency. The latter study was undertaken at the instance of the company attacking the bid, it was disclosed.

Paper Section Moves

WASHINGTON, D. C. — LeRoy Neubrech, chief, and his staff of the Pulp, Paper and Paperboard Section of the Department of Commerce, have been moved to Room 2017, Temporary T.

Willey Assumes New Duties at Brown

BERLIN, N. H.—Francis N. Willey has been appointed to serve as Chief of the Internal Audit Division of Brown Co.

CANADIAN NOTES

May Boost Canadian Freight Rates

OTTAWA—Canadian shippers of paper and other products may face new increases in freight rates if the Canadian railways grant in whole or in part any of the demands currently being sought by their workers across the nation. These increases are said to involve a cost of about $84 million a year for the railways. There is no doubt now that the railways will seek another freight rate boost to meet the new expenditures.

Canadian Car Loadings

OTTAWA—Canadian Government announces cars of revenue freight loaded on the railways in week ended July 1 dropped to 3,789 of woodpulp and paper as compared with 4,152 in preceding week but above the 2,804 in the similar week a year ago.

Such car loadings in the cumulative period from the beginning of 1950 until July 1 advanced to 116,676 cars as against 104,823 in the similar period a year ago.

Canadian Newsprint For Britain

OTTAWA—The British Government's announcement that it has decided to purchase 37,500 long tons of newsprint from Canada during the second half of 1951 after indicating earlier that a similar order for the first half of 1951 had been placed has come as no surprise here since it has been expected that Britain would ask for more newsprint from this country shortly. In fact, others will follow, it is hinted here.

It is known that several customers for Canadian newsprint, which have curtailed such purchases on account of exchange problems and entertained hopes to get their supplies elsewhere, were now studying ways and means of getting the necessary exchange to buy their newsprint in Canada. At least, it is known that alternative sources of supply are not satisfying requirements as anticipated.

There is much talk here about possible "barter deals" so that the newsprint supplies can be obtained by certain countries which are hard up for Canadian dollars. However, nothing official has been announced so far about such transactions.

In some countries, publishers are known to be openly in favor of Canadian newsprint being imported to increase such supplies and it is understood that these publishers have been urging their government for action in this respect, claiming that freedom of the press is threatened unless more such newsprint can be obtained. For instance, Australia publishers are mentioned as being in this situation and they are said to be pressing their demands now.

There is, however, another important factor and that is whether this country would be able to meet large-scale demands for newsprint. Judging from current production compared with likely demand, it is believed that only limited, almost "token" shipments, would be made to certain countries from Canada's mills in 1950 and early 1951 should these customers decide to change their present plans and return to Canada for such supplies in face of their exchange problems.

KEYES FIBRE COMPANY
COMPARATIVE STATEMENT OF EARNINGS

	Six Months Ended June 30, 1950		Six Months Ended June 30, 1949	
Gross Sales Less Discounts, Returns and Allowances		$4,199,431		$3,195,518
Cost of Goods Sold		2,479,489		2,011,657
Gross Profit		1,719,933		1,183,861
Selling, General and Development Expenses		611,103		519,511
Profit before Other Income		1,108,830		664,350
Other Income		53,904		55,086
		1,162,734		719,436
Miscellaneous Deductions		7,350		6,750
Balance		1,155,384		712,686
Depreciation and Amortization	$143,426		$143,285	
Provision for Federal Taxes on Income	369,666	513,092	199,457	342,742
Balance before Interest and Bond Expense and Income		642,292		369,944
Interest on Notes			417	
Interest on Bonds	39,480		44,465	
Bond Premium Income (Less Bond Expense)	(3261	39,134	(367)	44,515
Net Profit		603,158		325,429

Canada's Opinion Of Celler Probe

OTTAWA—The probe in Washington into the newsprint industry whereby it is claimed that the Canadian industry is artificially limiting supplies to United States is flatly contradicted here, with reaction being that information indicates clearly that Canadian mills have made all reasonable efforts to meet the growing American requirements and have made no secret of special efforts to aid Canada's need of U. S. dollars by sending all possible such supplies at a time when other countries could use more Canadian newsprint.

As a matter of fact, proportionately whenever Canadian mills produced more newsprint, United States publishers were tops on the list of preferred customers and any examination of the record for the past generation confirms readily this assertion. In 1939, Canadian newsprint production had amounted to 3,174,544 tons but in 1949 it was 5,176,327 tons, an increase of about 2,000,000 tons, with 1939 finding Canadian exports of newsprint to United States amounting to 2,281,460 tons but in 1949 rising to 4,380,250 tons. Approximately 2,100,000 tons more were shipped to American customers.

Obviously, Canadian mills have increased their shipments across the border to U. S. customers in a quantity distinctly showing they favored the U. S. business and there were no deliberate attempts to limt such supplies as suggested by the Washington probe.

Any examination of the record of production of U. S. mills in this same period will show clearly that production of American newsprint went down instead of up in face of the growing demands of U. S. publishers and at a time when Canadian shipments were increased to U. S.

Furthermore, Canadian production has been geared to U. S. demands as witnessed last year when Canadian mills operated at 97 percent capacity because reports received in Canada warranted such production under the circumstances of a threatened recession. However, the industry is now running at 101.6 percent capacity and U. S. customers are getting approximately 85 percent of Canada's output of newsprint, with merely 2 percent or even less going overseas.

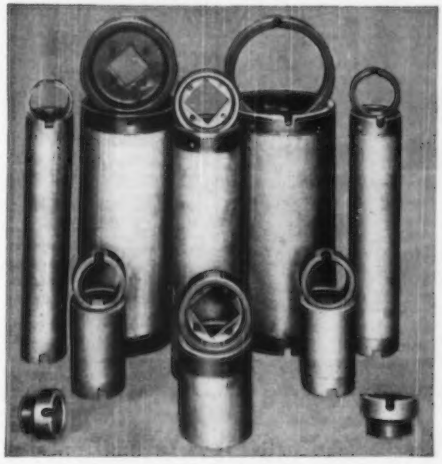
About the only concrete effect of the Washington probe so far on Canadian opinion is a strong reaction here that Canada ought to send more newsprint to customers other than those in United States and Canadian producers should perhaps not be so fully dependent on U. S. customers. Indeed, the growing opinion in the trade is that some special measure should be taken to allow more Canadian newsprint paper to be sent overseas in order to get around the exchange problem and to spread available supplies among more customers.

Editorials in the press have not questioned the right of those probing the newsprint industry in Washington but there have been strong criticisms of the charges that Canadian industry has limited supplies to American publishers because it is common knowledge in Canada that every possible effort has always been made to produce and to export to U. S. as much newsprint as possible, with no question of a monopoly in the industry even raised to support insinuations across the border about such activities.

In the meantime, it is known that existing newsprint mills are constantly looking into the possibilities of increasing production by increasing machine speeds or other methods, though private capital investments either in new mills or expansion efforts can only be made if conditions warrant such heavy commitments and there is nothing to stop any American capital from going into such undertakings. In other words, if any blame exists for the inability of present mills producing more newsprint to meet American needs, it is felt that U. S. backers as well as Canadians must share in this responsibility.

Gottesman Elects Dauman

Gottesman & Co., Inc., has elected Samuel Dauman first vice-president. Mr. Dauman has been with the company for 35 years and has been vice-president since 1932.



ELIXMAN
CORES
CAPS

Straight wound paper cores made in sizes from 2" to 10" inside diameter with any thickness wall required.

Long draw protected slot caps of heavy gauge steel in all standard sizes.

Heavy duty caps with reenforced square hole. This patented feature of reenforcement gives added strength and durability.

Samples of caps or cores will be gladly submitted

ELIXMAN PAPER CORE COMPANY, INC.

CORINTH, N. Y.

PRICES

The prices below reflect general market quotations at the mill level on the standard grades in which the normal volume of business is being done. Does not include occasional spot offerings.

NEW YORK

Delivered Ports

Standard News, per ton—

Rolls, contract	$100.00/	—
Sheets	115.00/	—

F.o.b. Mills. Carload freight allowed, dock N. Y.

Kraft— per cwt., 40# base wgt.

Standard Wrapping Rolls	‡ $6.75/	—
No. 1 Wrapping Rolls	‡ 7.50/	—
Standard Bag	‡ 6.50/	—

‡ Pricelists withdrawn by mills. Refer to *Trends*.

Tissues—per ream 24x36 (480) 10 lbs. 2500 lbs. or more

Wh. No. 1 Frd.	‡ $1.40	/ 1.55
Wh. No. 1 MG	‡ 1.40	/
Wh. No. 1½	‡ 1.30	/ 1.35
Wh. No. 2	‡ 1.15	/ 1.20
Kraft Non-Tar	‡ 1.25	/
White Non-Tar	‡ 1.52½	/

‡ Pricelists withdrawn by mills. Refer to *Trends*.

Toilet—per case of 100 rolls—1 M sheets.

Unbleached 4½x4½	$5.75/	—
Bleached 4½x4½	6.95/	—
Bleached 4½x5	8.80/	—

Per Case of 50 rolls—2000 sheets

Unbleached 4½x4½	$5.75/	—
Bleached 4½x4½	6.80/	—

Per Case of 100 rolls—1000 sheets

Facial, 4½ x 5, 2 ply	$8.95/$9.45	

Paper Towels—per case of 3750.

Wh. Jr. M'tif'd 9¼x9½	$5.25	
Br. Sr. M'tif'l 10x12	3.60	
Br. Jr. M'tif'd 9¼x9¾	3.10	
Br. Jr. Sgl. fold 10x10¾	3.15	
Blchd. 7½ x 11, 24/25 rolls	$3.95/$6.25	

Manila, per cwt.

No. 1 Jute Tag sheets*	$15.55/$17.55	
Reg. Jute M.F. 40-lb., sheets*	14.00/ 16.00	
Wrapping Manila	8.75/ 10.50	
Printing Manila	10.00/ 11.00	

Less usual allowance for rolls.

WORLD WOOD PULP MARKETS

Third Quarter Contract Price, Per Short Air-Dry Ton

	Delivered, with varying freight allowance		On dock Atlantic Ports		
	U. S.	Canadian	Swedish	Finnish	Norwegian
Groundwood	$65.00/ —	65.00/ —			
Sideruns Pulping News	$65.00/ —	65.00/ —			
Soda, Bleached	120.00/122.00	122.00/ —			*129.00/ —
Sulphate, Bleached	122.00/125.00	131.00/ —	*130.00/137.00†		
Sulphate, Unbl'd North'n		95.00/105.00	*90.00/ 97.50†		
Sulphate, Unbl'd South'n				* In Competitive range	Competitive
Sulphite Blchd. (S'ftw'd)	90.00/ 95.00	125.00/ —	*125.00/128.00†		
Sulphite, Blchd. (H'dw'd)	122.00/143.00				
Sulfite, Semi-blchd.	120.00/ —				
Sulphite, Unbleached	112.00/ —	107.00/ —	107.00/110.00†		
Sulphite, Unbl'd (Glassine)		110.00/ —	111.00/ — †		

* On dock. † Delivered.

Gummed Tape—per bdl., 500 bdls. or more.

60-lb. 600 ft. GSI	$ 5.25/$ 5.40
35-lb. 800 ft. GSI	6.05
35-lb. 500 ft. GSI	4.66
35-lb. 500 ft. GSO	4.53

Boards, per ton—*

Filled News	‡ $77.50/	—
Plain Chip	‡ 75.00/	—
Blchd. Mla. L.d. Chip	102.50/	—
White Pat. coated .020	‡ 120.00/125.00	
Kraft Liners 42 lb.	‡ 105.00/	—
Kraft Corr. .009	‡ 110.00/	—
Binders Boards	120.00/124.00	

* Base Prices per 10 tons. Less than 10 ton but over 3 tons, add $2.50; three tons or less, add $5.

The following prices are representative distributors' resale prices:

Rag Content Bonds and Ledgers—
White, 20 lb.

Bonds	4 Ctns. per cwt
100% Rag Ex. No. 1	‡ $57.55/$58.20
100% Rag	‡ 50.65/ —
75% Rag	‡ 39.20/ 39.30
50% Rag	‡ 32.35/ —
25% Rag	‡ 27.70/ —

Ledgers	4 Ctns. per cwt.
100% Rag Ex. No. 1	‡ $60.15/ —
100% Rag	‡ 51.90/ —
75% Rag	‡ 40.45/ 40.55
50% Rag	‡ 32.35/ 33.65
25% Rag	‡ 29.00/ —

Sulphite Bonds and Ledgers
White, 20 lb.

Bonds	4 Ctns. per cwt
Watermarked	$17.55/$18.35
Plain	16.80/ 16.90

Ledgers	4 Ctns. per cwt
Watermarked	$18.85/$19.65
Plain	18.05/ 18.10

White Book

Conversion Coated	Case per cwt
No. 1	$20.25/$21.65
No. 2	19.75/ 20.40
No. 3	18.25/ 19.65
Machine Coated	
No. 1	16.65/ 16.90
No. 2	14.65/ 15.40
Uncoated	
No. 1 Antique (Watermarked)	16.90/ 18.40
Offset	16.15/ 16.90
A Grade E. F.	16.00/ 16.15
A Grade S. C.	16.40/ 16.90
B Grade E. F.	15.15/ 15.40
B Grade S. C.	15.65/ 16.15

‡ Indicates a price change.

WASTE PAPER MARKET

The following quotations were gathered from major dealers in each market. They are an indication of the price range in which volume tonnage was moving on the date specified. Spot offerings or special packings are not necessarily included. Prices to mills, per ton, f.o.b. cars shipping point (includes brokers' fee.)

	New York July 13	Philadelphia July 10	Boston July 24	Chicago July 24
No. 1 Mixed Paper	$9.00/ 12.00	$10.00/ 12.00	$8.50/ 9.00	$12.00/ —
Boxboard Cuts	10.00/ 13.00	8.00/ 9.00	7.00/ 9.00	15.00/ —
Mill Wrappers	13.00/ 16.00	13.00/ 14.00	8.50/ 10.00	14.00/ —
No. 1 News	11.00/ 14.00	11.00/ 12.00	11.00/ 12.00	16.00/ —
Over-issue News	13.00/ 15.00	13.00/ 15.00	12.00/ 14.00	19.00/ —
Corrugated Containers	25.00/ 28.00	21.00/ 22.00	20.00/ 25.00	24.00/ —
New Corrugated Cuts	20.00/ 21.00	22.00/ 23.00	25.00/ 28.00	28.00/ —
Double Kraft Ld. Corr. Cuts	37.00/ 40.00	37.00/ 40.00	40.00/ 50.00	50.00/ —*
Used Kraft Bags	30.00/ 34.00	30.00/ 35.00	25.00/ 30.00	35.00/ —
No. 1 Brown Kraft Paper	32.00/ 35.00	35.00/ 38.00	32.00/ 35.00	35.00/ —
Super Resorted Br. Kraft	45.00/ 50.00	40.00/ 45.00	45.00/ 50.00	45.00/ —
New Br. Kraft Env. Cuts	70.00/ 75.00	65.00/ 70.00	70.00/ 77.00	70.00/ —
New Br. Kraft Cuts	55.00/ 60.00	60.00/ 62.00	60.00 /70.00	65.00/ —
No. 1 Glwd. Shvs.	25.00/ 30.00	25.00/ 30.00	30.00/ 35.00	30.00/ —
White Newsblanks	55.00/ 60.00	55.00/ 60.00	52.00/ 60.00	50.00/ —
No. 1 Flyleaf Shvs.	27.50/ 30.00	28.00/ 32.00	40.00/ 50.00	40.00/ —
No. 1 Soft Wht. Shvs.	75.00/ 80.00	70.00/ 80.00	95.00/ —	75.00/ —
Super Soft Wht. Shvs.	110.00/115.00	85.00/ 90.00	105.00/ —	85.00/ —
Hd. Wht. Shvs.	95.00/100.00	90.00/100.00	110.00/ —	95.00/ —
Hd. Wht. Env. Cuts	110.00/115.00	110.00/120.00	115.00/120.00	105.00/ —
New Manila Env. Cuts	65.00/ 70.00	80.00/ 85.00	70.00/ 75.00	60.00/ —
Col. Tab Cards	40.00/ 42.50	42.50/ 45.00	38.00/ 50.00	40.00/ —
Manila Tab Cards	70.00/ 75.00	70.00/ 75.00	70.00/ 85.00	70.00/ —
No. 1 Mixed Ledger	35.00/ 40.00	35.00/ 40.00	38.00/ 45.00	60.00/ —
White Ledger	55.00/ 60.00	50.00/ 55.00	48.00/ 55.00	28.00/ —
Mixed Books & Mags.	13.00/ 15.00	14.00/ 16.00	12.00/ —	47.00/ —
No. 1 Rep'd Hvy. Books & Mags.	25.00/ 30.00	22.00/ 25.00	30.00/ 31.00	15.00/ —

* f.o.b. or delivered.

Rag Market

New Domestic Cotton Cuttings
(Prices to Dealers, F.o.b. Ship. Pt.)

	Per 100 lbs.
White Shirt	$10.75/ $11.50
Unbleached Muslin	10.75/ 11.50
Light Silesias	6.75/ 7.75
White Black Blue Overalls	7.75/ 8.00
Blue Overalls	5.00/ 5.25
Fancy Shirt	5.00/ 5.25
Percales	6.25/ 6.50
Light Prints	5.75/ 6.00
No. 1 Washables	2.85/ 3.00
Bleachable Khaki	4.75/ 5.25
Unbleachable Khaki	4.25/ 4.75
Cottonades	4.25/ 4.75
Lt. Flannelettes	7.00/ 7.50
Men's Corduroy	3.50/ 4.00
Women's Corduroy	2.75/ 3.25
Canton Flannels, Blchd.	9.00/ 9.50
Underwear Cutters, Blchd.	11.00/ 11.50
Underwear Cutters, Unblchd.	11.00/ 11.50

Old Domestic Cotton Rags
(Prices to Dealers, F.o.b. Ship. Pt.)

	Per 100 lbs.
No. 1 Whites, Repacked	$4.50/ $5.00
No. 1 Whites, Miscellaneous	3.25/ 3.75
No. 2 Whites, Repacked	3.25/ 3.50
No. 2 Whites, Miscellaneous	2.75/ 3.00
Cotton Pants & Overalls	2.25/ 2.75
Thirds and Blues, Repacked	2.25/ 2.50
No. 1 Roofing Rags	1.40/ 1.50
No. 2 Roofing Rags	1.30/ 1.40
No. 3 & 4 Roofing Rags	1.20/ 1.30
Roofing Bagging	1.20/ 1.30

New Foreign Cotton Cuttings
(Prices to Mills, F.o.b. Dock, N. Y.)

	Per 100 lbs.	
New Dark Cuttings	$3.00/	$3.25
New Mixed Cuttings	3.00/	3.25
Light Silesias	6.50/	7.00
Light Flannelettes	7.00/	7.50
New White Cuttings	10.50/	11.00
New Unbleached Cuttings	10.50/	11.00
Fancy Shirt Cuttings	5.00/	5.75
Light Prints	4.75/	5.00
Bleachable Khaki, No. 1	4.50/	4.75
Unbl. Khaki, No. 1	3.75/	4.00

Old Foreign Rags
(Prices to Mills, F.o.b. Dock, N. Y.)

	Per 100 lbs.	
No. 1 White Cottons	$6.50/	$7.00
No. 2 White Cottons	5.50/	6.00
No. 3 White Cottons	3.50/	4.00
No. 4 White Cottons	3.00/	3.50
Extra Light Prints	4.50/	5.00
Old Light Prints	4.00/	4.25
Med. Light Prints	2.50/	2.75
Dutch Blue Cottons	3.25/	3.50
Checks and Blues	2.75/	3.00
Linsey Garments	2.10/	2.40
Dark Cottons, European	1.90/	2.00
Dark Cottons, Egyptian	1.75/	1.85
Old Shopperies	1.70/	1.80
New Shopperies	2.00/	2.25

Bagging
(Prices to Dealers, f.o.b. N. Y.)

	Per 100 lbs.	
Foreign Gunny	$5.25/	$5.50
Domestic Gunny, No. 1	5.50/	6.00
Heavy Wool Tares	6.00/	6.25
Foreign Manila Rope	5.00/	5.50
Domestic Manila Rope	5.25/	5.50
Jute Strings	5.50/	5.75
No. 1 Sisal Strings	3.00/	4.00
Mixed Strings	Nominal	
Paper Mill Tares	3.00/	3.50
No. 1 Scrap Burlap		
Foreign	4.00/	4.25
Domestic	4.50/	4.75
Austr. Wool Pouches	5.25/	5.75
New Burlap Cuttings	5.50/	6.00

MATERIALS

Aluminum, sulfate:
- coml. bags, wks. ..... cwt. 1.50
- iron-free 2.75

Alcohol, ethyl:
- tax free, drms. c.l. ..... gal. .45
- dnld. East Miss.

Casein, acid-prec.:
- dom. sh. pt. c.l. ..... lb. .21 .26
- imp. ex-dock ..... lb. .22 / .27½

Caustic soda:
- c.l. wks. solid, 76%, cwt. 3.20
- flak. & grd. 100-lb. drums 3.60
- liquid 50% tanks 2.40
- liquid 70% tanks 2.50

China clay:
- dom. air-float. filler, c.l. wks. ton 10.00
- water-washed 11.00
- coating ..... 16.30 /30.00
- imported, ex whse. ..short ton 15.20 /28.35

Chlorine:
- single-unit tanks, works ..cwt. 2.55
- multi-unit ..... cwt. 3.05 / 4.25

Formaldehyde:
- USP, inb. drms. c.l. wks. ....lb. .0570
- l.c.l. E. wks ..... .0620

Fuel oil:
- Bunker C, No. 6 Cal. hvy tanks, refinery ..... bbl. 1.25 / 1.55
- light ..... bbl. 1.65 / 2.10

Hydrogen peroxide:
- USP, 35% cbys. E of Miss. lb. .23½

Lime:
- hydrated, bags, wks. Buffalo ton 13.50

Rosin:
- B gum, drms, c.l. Savan. ..cwt. 4.10
- G, H, I, K, gum, do ....cwt. 5.61
- FF wood, do. ..... cwt. 4.60

Rosin size:
- 70%, gum & pale grds, tank cars, south, sh, pt. ..... cwt. 5.00 / 5.25

Salt cake:
- dom. bulk, c.l. contract del'd ton 18.00 /20.00
- wks. frt. all .. .. ton 22.00 / —

Soda ash:
- light, 58%, bags, wks. ....cwt. 1.35
- bulk ..... cwt. 1.10

Sodium silicate 40°:
- turbid, c.l. wks. ..... cwt. 1.10
- l.c.l. wks. ..... 1.30 / 1.40

Sodium peroxide:
- dms. c.l. E. of Miss. ..... lb. .18
- l.c.l. do ..... lb. .18½/ .19

Soybean, protein:
- chem. isol, wks. c.l. ..... lb. .20 / .21½
- Cinn. and Chic.

Sulfuric acid:
- 60° Be. cbys. c.l. ..... cwt. 1.40
- E. wks.
- l.c.l. ..... cwt. 1.80 / 2.50

Sulfur:
- crude c.l mines, contract, long ton 18.00
- f.o.b. vessels Gulf 19.50
- Export, f.o.b. Gulf 22.00

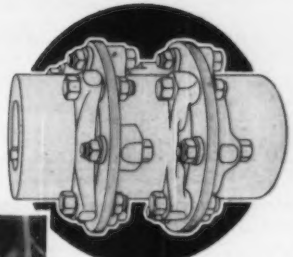
Sulfur dioxide:
- liquid, coml. cyl. wks. ....lb. .09
- multi-unit cars ..... lb. .0535

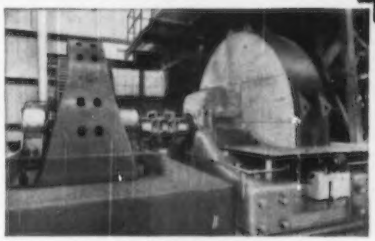
Starches
- pearl corn, bags, c.l. Chic. cwt. 5.42 / —
- white dextrines, c.l. Chic. cwt. 6.69 / —
- potato, Idaho, c.l. wks. ..cwt. 5.00 / —
- potato, Maine, c.l. wks. ....cwt. 5.50 / —
- tapioca, conv. dextrines—cwt. 6.75 / 7.50
- medium grds. Gulf ports. .... 6.25 / 6.50
- low, Siam, on dock NY .... 4.25 / 5.25

THOMAS *Flexible* ALL METAL COUPLINGS
FOR THOSE TOUGH PAPER MILL DRIVES

Patented Flexible Disc Rings of special steel transmit the power and provide for parallel and angular misalignment as well as free end float.

Thomas Couplings have a wide range of speeds, horsepower and shaft sizes:
½ to 40,000 HP
1 to 30,000 RPM





153" Sumner Iron Works Chipper—1500 HP @ 277 RPM—Soundview Pulp Co., Everett, Wash.

OTHER CHIPPER INSTALLATIONS
PUGET SOUND PULP & TIMBER CO. Bellingham, Wash.
CROWN-ZELLERBACH CORP. Port Townsend, Wash.
ST. REGIS PAPER CO. Tacoma, Wash.
CROWN WILLAMETTE PAPER CO. Camas, Wash.
RAYONIER, INC. Shelton, Wash.
WEYERHAEUSER TIMBER CO., PULP DIV., Everett, Wash.
BRITISH COLUMBIA PULP & PAPER CO., LTD., Woodfibre, B. C.

THE THOMAS PRINCIPLE GUARANTEES PERFECT BALANCE UNDER ALL CONDITIONS OF MISALIGNMENT.

• • •

NO MAINTENANCE PROBLEMS.

• • •

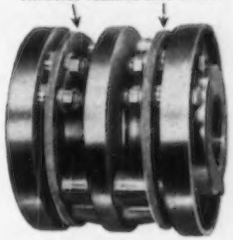
ALL PARTS ARE SOLIDLY BOLTED TOGETHER.

• • •

FOR SPECIAL COUPLING PROBLEMS CONSULT OUR ENGINEERING DEPARTMENT.

BACKLASH, FRICTION WEAR and CROSS-PULL are eliminated.
LUBRICATION IS NOT REQUIRED!

PATENTED FLEXIBLE DISC RINGS



Write for the latest reprint of our Engineering Catalog.

Specialists on Couplings for more than 30 years

THOMAS FLEXIBLE COUPLING COMPANY
Largest Exclusive Coupling Manufacturer in the World
WARREN, PENNSYLVANIA, U.S.A.

Talc:
domestic, 50-lb. sacks, c.l. wks. .....ton 23.00 /28.00

Titanium dioxide:
anastase, c.l. deld., bags..lb. .19½
l.c.l. deld. .....b. .20
rutile, c.l. deld. .....lb. .21¼
l.c.l. deld. ..... lb. .22½

N.B.: For special market conditions, see *Trends*.

IMPORTS

IMPORTS AT NEW YORK

Week Ending July 22

Newsprint

Madden Reeve Angel & Co., Inc., Trolleholm, Kemi, 1720 rolls.
(———), Fort Avalon, Cornerbrook, 4032 rolls.
Madden Reeve Angel & Co., Inc., Mormacdale, Kotka, 882 rolls.

Wallboard

Elof Hansson, Inc., Stockholm, Gothenburg, 232 bls.
G. S. Hedbors, Black Gull, Antwerp, 10 bls.
Elof Hansson, Inc., Trolleholm, Ostrand, 1000 crates.

Wallpaper

S. K. Lonergan, Stockholm, Gothenburg, 20 pcls., 53 cs.
C. A. Haynes & Co., American Inventor, London, 47 bls., 1 cs.
W. H. S. Lloyd & Co., American Packer, Manchester, 5 bls.
Capital Wallpaper Co., American Packer, Manchester, 24 ctns.

Boxboard

Jay Madden Corp., Mormacdale, Helsingfors, 331 rolls (folding).

Parchment

Meadows Wye & Co., Mauretania, Southampton, 1 cs.

Photo Paper

J. J. Gavin & Co., Mauretania, Southampton, 5 cs.
J. J. Gavin & Co., Caronia, Southampton, 4 cs. (unsensitized).
All Transport, Inc., American Inventor, London, 1 cs.

Tissue Paper

Swan Mills, Inc., American Scientist, Hamburg, 48 bls.

Cover Paper

S. Stern Henry, Caronia, Southampton, 9 cs.

Surface Coated Paper

Gevaert Co. of America, Black Gull, Antwerp, 23 cs.

Crepe Paper

Brundage Merchandise Co., American Counselor, Rotterdam, 27 cs.
Brundage Merchandise Co., American Jurist, Rotterdam, 27 cs.

Filter Paper

H. Reeve Angel & Co., Inc., American Inventor, London, 18 cs.

Drawing Paper

H. Reeve Angel & Co., Inc., American Inventor, London, 3 cs.

Gummed Paper

B. F. Drakenfeld & Co., American Traveler, Liverpool, 47 cs.
B. F. Drakenfeld & Co., Parthia, Liverpool, 36 cs.

Bowl Paper

Hurley Johnson Corp., American Traveler, Liverpool, 40 bls. (round cut).

Cardboard Boxes

W. Liddell & Co., Ltd., Parthia, Belfast, 6 cs.

Paper

Steiner Paper Corp., Exanthia, Trieste, 2 cs.
Madden Reeve Angel & Co., Inc., Mormacdale, Kotka, 136 rolls (waste).

Rags, Baggings, Etc.

National City Bank, Pioneer Reef, Sydney, 8 bls. rags.
Bank of Australia, Pioneer Reef, Sydney, 7 bls. tailors slips.
D. Benedette, Exeter, Marseilles, 117 bls. rags.
Chemical Bank Trust Co., Exeter, Genoa, 206 bls. hemp rags.
(———), Exanthia, Trieste, 63 bls. rags.
1st National Bank of Boston, Exanthia, Venice, 154 bls. old bagging.
National Bank of Detroit, Exanthia, Venice, 24 bls. scrap bagging, 91 bls. jute bagging.
Balex Export Co., Exermont, Haifa, 127 bls. old jute.
Harris Goldman & Co., Stockholm, Gothenburg, 66 bls. old bagging, 60 bls. cotton cuttings.
(———), Gudrun Maersk, Rotterdam, 25 bls. colored paperstock.
Harris Goldman & Co., Gudrun Maersk, Rotterdam, 115 bls. old rags.
Trust Co. of North America, American Scientist, Havre, 44 bls. jute waste.
A. de Vries Trading Corp., Ronda, Havre, 89 bls. scrap bagging, 126 bls. old rags.
(———), Ronda, Havre, 19 bls. rags.
A. de Vries Trading Corp., Black Gull, Antwerp, 159 bls. scrap bagging, 119 bls. old bagging.
A. de Vries Trading Corp., Diemerdyk, Rotterdam, 64 bls. paperstock.
E. J. Lang, American Counselor, Antwerp, 54 bls. jute bagging.
(———), American Inventor, London, 110 bls. old sisal strings, 120 bls. old jute bagging.
Chase National Bank, American Inventor, London, 120 bls. waste bagging.
Castle & Overton, Inc., American Inventor, London, 48 bls. bagging.
Brandwein Mazur Co., American Traveler, Manchester, 50 bls. bagging.
E. Butterworth & Co., Inc., American Traveler, Manchester, 172 bls. old bagging.
A. Siegle Corp., American Traveler, Manchester, 213 bls. paperstock.
(———), American Traveler, Manchester, 40 bls. bagging.
Lonmar Textile By Products, American Traveler, Manchester, 49 bls. old bagging.
E. J. Lang, American Traveler, Manchester, 74 bls. bagging.
C. Smiles, American Traveler, Manchester, 250 bls. waste cordage.
E. Butterworth & Co., Inc., American Traveler, Liverpool, 71 bls. bagging.
National City Bank, Cypria, Alexander, 250 bls. bagging, 61 bls. tares.
W. J. Green Co., American Packer, Manchester, 32 bls. new light flannelettes.
(———), American Packer, Glasgow, 142 bls. bagging.
Castle & Overton, Inc., American Packer, Glasgow, 68 bls. grey linen thread waste.
A. Siegle Corp., Parthia, Liverpool, 166 bls. jute waste.

Old Rope

E. J. Keller Co., Inc., Gudrun Mearsk, Rotterdam, 116 coils old manila rope.
Irving Trust Co., American Inventor, London, 50 coils old rope.

Casein

H. S. Cramer, Ronda, Havre, 500 bags.

Gluestock
Woodpulp Boards

Jay Madden Corp., Mormacdale, Kotka, 452 rolls.
Jay Madden Corp., Trolleholm, Kemi, 67 bls., 27 rolls; 67 rolls corebboards.

IMPORTS AT ALBANY

Week Ending July 22

Pulp Sales Corp., Trolleholm, Kemi, 11765 bls. unbleached kraft sulphate pulp, 540 bls. unbleached sulphite pulp.

IMPORTS AT NEWARK

Week Ending July 22

Pulp Sales Corp., Pankakoski, Kotka, 880 bls. unbleached sulphite pulp.
Madden Reeve Angel & Co., Inc., Pankakoski, Kotka, 145 rolls newsprint.

IMPORTS AT NORFOLK

Week Ending July 22

D. Benedetto, Exeter, Alexandria, 199 bls. old waste bagging.
A. de Vries Trading Corp., Gudrun Maersk, Rotterdam, 59 bls. scrap bagging.
W. C. Jones, Gudrun Maersk, Manchester, 58 bls. old bagging, 71 bls. cotton waste.
D. Benedetto, Gudrun Maersk, Liverpool, 57 bls. old bagging.
Chase National Bank, Gudrun Maersk, Liverpool, 113 bls. new cuttings.
Cellulose Sales Co., Trolleholm, Ostrand, 336 bls. sulphate pulp, 900 bls. sulphite pulp.
Arkell Safety Bag Co., Trolleholm, Gothenburg, 192 rolls wrapping paper.
(———), American Packer, Glasgow, 121 bls. scrap bagging, 94 bls. old bagging.
E. J. Keller Co., Inc., American Packer, Glasgow, 109 bls. paperstock.

IMPORTS AT BALTIMORE

Week Ending July 22

Bank of America, Exanthia, Trieste, 324 bls. unbleached sulphite pulp.
1st National Bank of Boston, Exanthia, Venice, 88 bls. old jute bagging.
Jay Madden Corp., Mormacdale, Helsingfors, 85 rolls folding boxboard.
Jay Madden Corp., Mormacdale, Kotka, 86 rolls solid white woodpulp boards.

IMPORTS AT PHILADELPHIA

Week Ending July 22

1st National Bank of Boston, Exanthia, Venice, 91 bls. old jute bagging.
(———), Exton, Genoa, 37 bls. rags.
Madden Reeve Angel & Co., Inc., Mormacdale, Kotka, 649 rolls newsprint.
Castle & Overton, Inc., American Inventor, London, 36 bls. new light prints.
Belmont Burlap Co., American Inventor, London, 12 bls. old bagging.
Pulp Sales Co., Trolleho'm, Kemi, 1936 bls. unbleached sulphate pulp, 1350 bls. unbleached sulphite pulp.
Elof Hansson, Inc., Trolleholm, Gefle, 254 bls. woodpulp.
Leigh Textile Co., American Packer, Manchester, 137 bls. mixed bagging.

IMPORTS AT BOSTON

Week Ending July 22

Parsons & Whittemore, Inc., Black Gull, Hamburg, 10 bls. wrapping paper.
Pistorino & Co., Abbedyk, Buenos Aires, 3 bls. threads.

NEW EQUIPMENT

Wood Study Kit

The wood study kit contains 54

specimens of important commercial species of wood and wood products in use in the U. S. Set includes knife, a 10-power hand lens, and an 84-page manual which identifies each species and describes its use.

Abrasion Wear Tester

The Abrasion Wear Tester is a new model of the Taber Abraser designed with sturdier shafts, larger ball bearings, etc., for testing solid materials and coated surfaces. It embodies the rotary rub-wear action of dual abrading wheels crisscrossing their abrasion path. Action is described as continuous throughout the 360° rotation of the specimen, and closely parallels abrasive wear encountered in actual use.

Both qualitative and quantitative wear results are obtainable with the new model, and a selection of specimen holders and abrading wheels is available.

Powell valve with Koncentrik connectors disassembled.

Koncentrik Fittings

Koncentrik Stainless Steel Flared Tube Fittings feature (1) automatically self-centering seat designed to provide a perfect, wedge-type seal even though tube is assembled off-center; (2) reinforcing Teflon rings that double-seal the connection against costly, dangerous line losses; (3) seats and tube nuts can be repeatedly reused if changes are necessary.

Form Southern Paper Products

ASHEVILLE, N. C. — Southern Paper Products, Asheville, N. C., has been incorporated with capital stock of $100,000 to manufacture paper and paper materials. The incorporators were A. B. Henley, Nancy Henley and George Ingold, all of High Point.

NEW LITERATURE

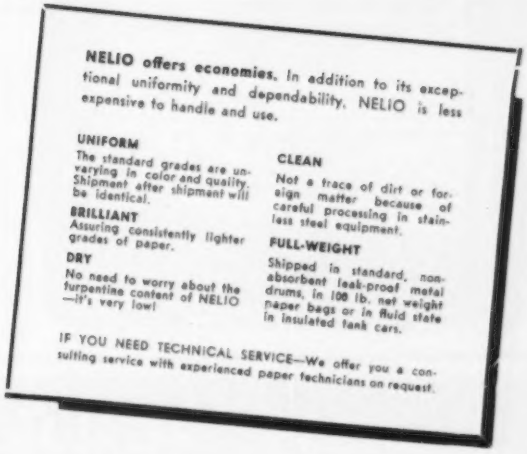
Mine Safety Appliances Co. Bulletin No. B-20, "The M.S.A. Demand Mask." Details on design and operation.

Paisley Products, Inc. Technical Service Bulletin No. 22. Illustrated file-size booklet on selection and use of corrugated and solid fibre shipping cases and case sealing adhesives for hand or machine sealing operations.

NELIO

is free from the defects of ordinary gum rosin!

NELIO Gum Rosin offers distinct advantages for the manufacture of size. It is made by scientific methods, under strict laboratory control.


NELIO offers economies. In addition to its exceptional uniformity and dependability, NELIO is less expensive to handle and use.
UNIFORM
The standard grades are unvarying in color and quality. Shipment after shipment will be identical.
BRILLIANT
Assuring consistently lighter grades of paper.
DRY
No need to worry about the turpentine content of NELIO —it's very low!
CLEAN
Not a trace of dirt or foreign matter because of careful processing in stainless steel equipment.
FULL-WEIGHT
Shipped in standard, non-absorbent leak-proof metal drums, in 100 lb. net weight paper bags or in fluid state in insulated tank cars.
IF YOU NEED TECHNICAL SERVICE—We offer you a consulting service with experienced paper technicians on request.

Write for Samples and Prices

NELIO is manufactured by THE GLIDDEN COMPANY, NAVAL STORES DIVISION and sold by

E. W. COLLEDGE

General Sales Agent, Inc.
JACKSONVILLE 1, FLORIDA

NEW YORK 17	CHICAGO 4	CLEVELAND 14	SAN FRANCISCO 5
52 Vanderbilt Ave.	28 E. Jackson Blvd.	807 National City Bank Bldg.	503 Market St.

AMERICAN PAPER AND PULP ASSOCIATION'S PAPER PRODUCTION RATIO REPORT

(Production as percent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

	June 17	June 24	July 1	July 8	July 15
1950	102.5	104.5	104.0	56.0	99.3
	June 18	June 25	July 2	July 9	July 15
1949	*78.1*	*77.0*	*77.5*	*43.7*	*76.0*

Note: 3.2% of capacity shut down for vacation period.

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1950	98.7‡	101.1‡	102.6‡	100.9‡	101.8‡	103.2‡							
1949	*94.6*	*92.8*	*89.1*	*85.1*	*82.7*	*78.6*	*72.8*	*87.6*	*89.7*	*96.0*	*98.2*	*90.4‡*	*88.6‡*

‡ Preliminary.

COMPARATIVE YEARLY SUMMARIES

	1943	1944	1945	1946	1947	1948	1949	1950
Year to Date	87.7	87.3	87.5	99.2	103.5	97.8	85.6	99.8
Year Average	87.8	88.1	89.4	100.1	104.3	96.2	88.0‡	

PAPERBOARD OPERATING RATIOS†

	June 17	June 24	July 1	July 8	July 15
1950	93	94	94	55	82
	June 18	June 25	July 2	July 9	July 16
1949	*78*	*80*	*75*	*55*	*64*

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1950	88	92	91	92	91	94							
1949	*88*	*85*	*79*	*79*	*78*	*75*	*64*	*86*	*87*	*94*	*93*	*83*	*83*

* All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.

Michigan Pipe Co. Booklet, "MPC, Better Pipe to Better Your Industry." Features "Wood, the Material That's Always New in Industry" and its application to paper, pulp and allied products.

Monsanto Chemical Co. Illustrated Bulletin. Describes laboratory and field studies of paradichlorobenzene.

Slayton & Co., Inc. Pamphlet, "Paper Is Leading a Busy New Life." A brief history of papermaking.

Streeter-Amet Co. Bulletin, "Mechanical Recorders for Science and Industry." Features their applications to a variety of counting and timing jobs.

Towmotor Corp. Certified Job Study No. 96, "Towmotor Fork Lift Trucks and Tractors." Devoted to newsprint handling.

Wheelco Instruments Co. Bulletin, Vol. 9, No. 3, "Wheelco Comments." Highlights "Production Benefits Secured Through Automatic Controls."

American-LaFrance-Foamite Corp. Two Bulletins. "News Story about New Foamite Airfoam System" and "News Story about New System for Killing Class 'B' and 'C' Fires."

American Leather Belting Assn. Folder, "What is the Uni-Pull Drive?" Shows adaptability to all types of machines.

Ampco Metal, Inc. Chapter 31, Welding Handbook. Covers welding of copper and copper alloys. "Ampco Welding News," No. 44. Features welding with aluminum bronze.

Armstrong Machine Work. Bulletin, "Armstrong Air Traps." Provides selection and installation information, physical data, list prices.

British Columbia Forest Service. Technical Bulletin, "Precision Measurement of Radial Growth and Daily Radial Fluctuations in Douglas Fir" by G. Warrack and C. Joergensen.

British Constructional Steelwork Assn. Brochure, "Examples of Structural Steel Design to Conform with the Requirements of B-S 449:1948."

By-Products Steel Co. Bulletin, "Plate That's Shaped." "Steel Shapes for Industry." A 16 mm motion picture in sound and color on "know how."

Carboline Co. Bulletin C-8, "Carbo-Fix." Describes the use of corrosion-resisting cements to repair cracked, corroded and broken mechanical equipment.

The Carpenter Steel Co. "Carpenter Stainless Welded Tubing." A new Schedule A Price List.

Clark Equipment Co. Bulletins, "Material Handling News"; "Roll Handling Revolutionized!"; "The Bartel Device for Carloaders and Utilitrucs."

OBITUARIES

George A. Stroebel, 71, Neenah, an employe of the Neenah Paper Co. for more than 40 years, died at his home recently.

Hector Murray, 49, former superintendent of the W. Ralston Paper Co. plant at Niagara Falls, N. Y., died July 16 at his home in Spotswood, N. J. He had been employed by the paper company for 20 years. He moved to New Jersey two years ago when the firm closed its Niagara Falls unit.

MEISEL MACHINERY IS HELPING IN ALL FIELDS

Cigarette **Wax** **Photographic** **Jet Propulsion**

Condenser **Grease Proof** **Snap-out Forms** **Aero-engine Parts**

MEISEL PRESS MFG. CO. 950 Dorchester Ave., Boston

ENGLISH ECCO CLAYS CLAYS

TRADE MARK

UNIFORM SUPERIOR DEPENDABLE

English China Clays Sales Corporation
551 Fifth Avenue, New York City

WEST VIRGINIA
PULP and PAPER COMPANY

230 Park Ave.
New York 17, N. Y.

35 East Wacker Drive
Chicago 1, Ill.

Public Ledger Building
Philadelphia 6, Pa.

503 Market St.
San Francisco 5, Calif.

Manufacturers of West Virginia Mill Brand Papers

SUPERCALENDERED
ENGLISH FINISH
LITHOGRAPH
LABEL
OFFSET
EGGSHELL
MUSIC
POSTER
BOND
WRITING
ENVELOPE
MIMEOGRAPH
INDEX BRISTOL
POST CARD
COVER
CUP AND CONTAINER
FILE FOLDER
TAG
COATED
MACHINE COATED

KRAFT CONVERTING AND KRAFT ENVELOPE
KRAFT LINER BOARD

MILLS

Mechanicville, New York
Luke, Maryland
Covington, Virginia
Tyrone, Pennsylvania
Williamsburg, Pennsylvania
Charleston, South Carolina

PRICE & PIERCE
LTD.

Wood Pulp
and
Paper
Agents

60 E. 42 ST., N. Y. 17

EXCELSIOR KNOX Woolen Co. Camden Me. FELTS & JACKETS

"EXCELSIOR" FELTS

The Trademark of Felts of Superior Quality
for Every Grade of Pulp and Paper

KNOX WOOLEN COMPANY
CAMDEN, MAINE

CLEARING HOUSE

HELP WANTED

MEN WANTED
POSITIONS OPEN

We can place assistant manager and assistant superintendent for unbleached and bleached kraft pulp mills; superintendent roofing felt mill; night superintendent also day and night foremen for corrugated container plants; personnel director; night superintendent rag and sulphite paper mill.

Mechanical engineers, plant engineers, master mechanic and head draftsman for paper and pulp mills, also firms building paper and pulp machinery; electrical supervisor (Canada); finishing foreman; chemists and chemical engineers; chemical engineering graduate with selling experience to sell mechanical equipment; beater engineer expert on colors; machine tenders and back tenders; chemical engineer for statistical quality control work for fiber insulation board mfg.

We invite correspondence (confidential) with executives seeking positions and with employers seeking new personnel.

CHARLES P. RAYMOND SERVICE, Inc.
294 Washington Street, Boston, Mass.

WANTED

Man to take full charge of Tissue Sheeting Finish Room.

Address Box 50-366, care Paper Trade Journal.

J-27

WANTED

TWO MACHINE TENDERS on cylinder machines making specialty tissues.

Address Box 50-368 care Paper Trade Journal.

J-27

SUPERINTENDENT

To a papermaker now holding a good job. Want to be your own boss? No capital necessary. Three machines and groundwood mill located in northeast. Technical background desirable but not necessary. Correspondence strictly confidential. Address Box 50-369 care Paper Trade Journal. A-17

SALARIED POSITIONS $3,500—$35,000

If you are considering a new connection communicate with the undersigned. We offer the original personal employment service (40 years recognized standing and reputation). The procedure, of highest ethical standards, is individualized to your personal requirements and develops overtures without initiative on your part. Your identity covered and present position protected. Send only name and address for details.

R. W. BIXBY, INC.
117 Dun Bldg., Buffalo 2, N. Y.

TF

HELP WANTED

WANTED

Superintendent for 2-mach. mill, sulphite papers; Night Superintendent, rag and sulphite papers, specialties; Young Chemist, exper. in Toilet Papers and de-inking process desirable; Salesman to sell box board in South; Beater Engineers, good on colors; Machine Tenders for Fourdrinier and Cylinder machines. Many other positions open.
PERSONNEL SERVICE ASSOC., 115 State Street, Springfield 3, Mass., Specialized Confidential Placement Service for the Paper and Allied Industries.

A-3

TECHNICAL SALESMAN
PAPER CLAY

Personable young man, preferably technical graduate with actual production experience in papermill, wanted for responsible sales and technical service position involving filler and coating clay. Considerable traveling from N. Y. Office. Replies confidential.

Industrial Products Division
J. M. Huber Corporation
342 Madison Avenue
New York 17, New York J-27

ADJUSTORS—Paper Bag Machine adjustor for New York Plant. Thoroughly experienced in Potdevin sacks and/or squares and flats. Address Box 50-352 care Paper Trade Journal. J-27

WANTED—Two High Grade Sales Engineers familiar with pulp and paper mill equipment. One for the East and one for the Pacific Coast. Address Box 50-355 care Paper Trade Journal. J-27

DRAFTSMEN—Experienced on Paper Mill Machinery. Give complete resume of experience and salary desired. Address Box 50-364 care Paper Trade Journal. J-27

SITUATIONS WANTED

RESEARCH DIRECTOR—20 years experience in peace and wartime Research, Production, Manufacturing, paper converting, synthetic coatings, adhesives, decorative, ordnance, functional, building, industrial, anti-corrosive papers, foodwraps, imagination, know how, initiative, products, processes seeking new responsibilities with well established company in Research Management. Address Box 50-341 care Paper Trade Journal. J-27

GRADUATE OF PULP AND PAPERMAKING COLLEGE desires engineering position where 26 years of practical mill operation can be of most use. Experienced on cylinders and Fourdriniers, stock preparation, semi-chemical pulp, and process. Excellent labor relations record. Address Box 50-360 care Paper Trade Journal. J-27

PRODUCTION MANAGER or Superintendent—Experienced on Sulphite, fine, groundwood, printing and converting and lightweight specialties also machine coating. Extensive knowledge of printing and converting fields. Address Box 50-361 care Paper Trade Journal. A-3

SITUATIONS WANTED

ENGINEER AND OPERATOR with years of experience, wants to contact mills wanting to improve manufacturing and quality of products.

Address Box 50-344 care Paper Trade Journal. A-17

PLANT ENGINEER—Experienced in large sulphite specialty pulp and paper mill maintenance and engineering; paper mill design; desires responsible mill connection. Address Box 50-350 care Paper Trade Journal. TF

CHEMICAL ENGINEER, M. S. 8 years experience research, technical control. Paperboard, coatings, adhesives, cartons, containers. Cost conscious. Desires position in converting or allied industries east or midwest. Address Box 50-362 care Paper Trade Journal. A-10

FOR SALE

FOR SALE

100" Horne single knife Sheeter with back-stand.
64" Hamblet Sheeter with Layboy and back-stand.
58" Finley Sheeter.
36" Back Sheeter.
74" Beloit 2-drum Rewinder.
72" Cameron 44-W Slitter & Rewinder.
48" Kidder model CH Slitter.
32" Cameron model 24-3A Slitter.
Cottrell 3-color Bag Press.
Flat Cutters, 32", 38", and 44" Power Machines.

Also many good values in Printing, Newspaper & Lithographing Equipment.

THOMAS W. HALL COMPANY, Inc.
120 West 42nd St., N. Y. 18
(Plant at Stamford, Conn.) TF

FOR SALE

1—Beloit Yankee Dryer, 12 ft. diameter x 11 ft. face.

J. J. ROSS COMPANY
250 Frelinghuysen Ave., Newark 5, N. J.
Tel. Bigelow 3-3720 J-27

FOR SALE—1 Westinghouse Synchronous Motor, 250 H. P., 360 R.P.M., full load speed, 440 volt, 3 phase, 60 cycle, 341 amp., Style 50-74DS98, Serial #4559346. Good condition. As is f.o.b. Roanoke Rapids, subject to inspection. Address Box 50-365 care Paper Trade Journal. A-10

FOR SALE—2 used 46-inch Waldron 6-brush coating units with complete festoon drying system and reelers. Good condition. Price reasonable. Address Box 50-253 care Paper Trade Journal. TF

RATES FOR CLASSIFIED ADVERTISING

HELP WANTED—10c a word. Double rate for heavy face type. Minimum charge $2.50.

SITUATIONS WANTED—10c a word, double rate for heavy face type. Minimum charge $2.50. If repeated ½ rate will be charged for each consecutive repetition.

FOR SALE—10c a word. Double rate for heavy face type. Minimum charge $2.50.

WANTED—10c a word. Double rate for heavy face type. Minimum charge $2.50.

OPPORTUNITIES—10c a word. Double rate for heavy face type. Minimum charge $2.50.

Classified advertising space may also be purchased at $5.00 per single column inch. All classified advertisements are payable in advance. If box number is used—70 cents additional.

Address replies to advertisements appearing under Box Numbers in care of PAPER TRADE JOURNAL, 15 West 47th Street, New York 19, N. Y.

FOR SALE

1—112" Cameron, Type 18, 60" rewind.
1—72" Cameron, Type 10-11 (Late type)

BEATERS
1—500 lb. Beater—iron tub.
1—Dilts Iron Tub Laboratory Beater. Beater roll 14" diameter x 10¼" face, including motor.

CALENDER STACKS
1—72" 5 roll Calendar Stack.
1—2 roll pressure calender—32" x 108".

CHIPPER
1—96" Murray 4 knife Chipper—anti-friction bearings.

CRUSHER & HAMMERMILL
1—Murray Chip Crusher.
1—Jeffrey Hammermill.

CYLINDER MOLDS
1—36" diameter x 80" face.
1—30" diameter x 72" face.
1—36" diameter x 79" face.
1—48" diameter x 84" face.
1—36" diameter x 88" face.
1—36" x 68" face.
2—36" diameter x 54" face.

DECKERS
3—IMPCO 75½" face x 30" diameter cylinder mold.

DRIVES
2—75 h.p. drives.
1—#4 Reeves Drive
1—#3 Reeves Drive.
1—#5 Reeves drive.

V-BELT DRIVE
1—21½" diameter x 7½" face, 5 groove.
1—16½" diameter x 7½" face, 5 groove. (With clutch).

DRYERS
2—42" diameter x 74" face.
7—24" diameter x 48" face.
4—36" diameter x 72½" face, with gears and bearings.
1—48" diameter x 91" face.
1—36" x 143".
1—24" x 130".
3—36" diameter x 96½" face.
1—48" diameter x 70" face.
2—48" diameter x 92" face.
1—48" diameter x 82" face.
2—36" diameter x 76" face.
23—36" diameter x 70" face—complete.

EMBOSSER
1—84" Hudson Sharp Toilet Embosser. Spare engraved roll.

FELT CONDITIONER
1—146" Nash Felt Conditioner.

FLAT SCREENS
1—6 plate Shartle Flat Screen.

FRAMES
2—Deck Frames for 8 Dryers, 48" diameter. Vertical frames for 100 dryers, 48" diameter, with bearings.

JORDANS
2—Noble & Wood Mammoth Junior.
1—Noble & Wood Mammoth Senior.
1—Emerson Jordan—25 to 30 tons capacity —iron plug including new spare iron plug.

LABORATORY EQUIPMENT
1—3' Shartle Hydrapulper, with motor.

LIME SLUDGE FILTERS
2—IMPCO Lime Sludge Filters, vacuum type, 5' diameter x 4' face.

MISCELLANEOUS
1—Caustic Mixer.

MOTORS
Write us regarding your requirements.

PRESSES
3—Sets Primary Presses, complete, 145" face. Anti-friction bearings. Also all types of rolls for 145" wet end.

PULLEYS
Various cone and assorted pulleys.

PULP BALER
1—140 ton hydraulic Pulp Baler. (Practically new).

PULPERS
1—Jones Pulper. Complete with motor and drive.
1—Noble & Wood Pulper—Iron Tub.

PULP PRESSES
2—Pulp Presses 76" wide (Kamyr Type).

PUMPS
Various sizes of Centrifugal and Plunger Pumps. Write us regarding your particular requirements.

REELS
1—146" Pope Reel.
1—104" two bowl reel.
1—72" Beloit Reel.

ROLLS
Felt, Table, Press, Breast, Couch, etc. Various sizes and types. (Bronze, Rubber, Iron, etc.)

ROTARY SCREENS
1—#2 Bird Rotary Screen.
1—#2A Bird Rotary Screen.

SHEETERS
1—136" Moore & White Sheeter, duplex, with layboy.
2—36" Sheeters.
2—46" Sheeters.
2—50" Sheeters.
1—82" Clark Sheeter (Simplex.)

SLITTERS AND WINDERS
1—84" Cameron—Type 8-10.
1—72" Cameron—Type 10-11 (Late type).
1—50" Cameron—Type 24-2L.
1—42" Cameron—Type 40-4-R
3—42" Cameron—Type 24-2-A.
1—42" Cameron—Type 9-5
1—42" Cameron Constant Tension with pneumatic cutter.
1—115" 2 drum Waldron
2—112" Cameron Type 18.

STOCK PUMPS
1—10 x 20 Shartle Duplex.
1—7 x 16 Shartle Duplex.
4—7 x 16 Shartle Triplex.
1—10 x 20 Shartle Triplex.
2— 8 x 18 Shartle Duplex.
Advise as to your requirements.

SUCTION BOXES
5—Suction Boxes, 82" drilled face x 6" wide.

SUCTION COUCH ROLL
1—Sandusky 14⅞" dia. x 103" drilled face.

VACUUM PUMPS
1—#1 Nash Hytor.
1—#3 Nash Hytor.
1—#6 Nash Hytor.

VAT
1—Iron end Vat only, for decker or saveall, suitable for cylinder mold 36 x 130.

WASHERS
1—3 cylinder Washer 30" diameter x 75" face cylinder mould.

WAXING MACHINES
1—72" Mayer Waxer.
1—80" Potdevin Waxing Machine.

YANKEE DRYERS
1—Beloit 12 ft. diameter x 11 ft. face.
3—Yankee Dryers 84" diameter x 52, 53 and 62" face.

We are always in the market to purchase your surplus or idle machinery. What have you to offer? Wanted Cylinder and Fourdrinier Machines (complete mills).

Paddy Ross, Pres. **J. J. ROSS COMPANY** **Ben Kurs, Treas.**

250 Frelinghuysen Ave. **Tel.—Bigelow 3-3720** **Newark 5, N. J.**

FOR SALE

1—156" Beloit Fourdrinier Paper Machine 70' wire, Suction Couch, two presses, forty dryers 48" Dia., 8 Roll Calender Stack, Reels, Winder and Drives.

2—Type V-L Erie City Water Tube Package Boilers 250 H.P., 250# pressure equipped with Erie City Underfeed Stokers. Built New in 1948 operated less than four months. Complete with pumps, controls, water softeners, etc. Blueprints.

1—86" Moore & White Fourdrinier Machine, Suction Couch Roll, 60' wire, two Presses, 24 Dryers, Size Press. 2—Eight Roll Calender Stacks, Reels, Winder, complete Drive.

All above can be inspected, ready to run. Prices attractive for quick sale with or without auxiliaries.

OSBORNE PAPER MILL COMPANY

FULTON, NEW YORK

J-27

FOR SALE

3—12" Partition, 1½" core, lunch roll rewinders, complete with motor, glue wheels, etc. Adjustable for full core, half core, no core.
1—24" Schultz Automatic Rewinder, 1¼" core, complete with 100', 25', 36' and 125' combinations.

Address Box 50-363, care Paper Trade Journal. J-27

PAPER COATING MACHINERY MANUFACTURERS — Waxing, Oiling, Carbon, Laboratory Coating and Treating and Flat Ream Measuring and Converting Machines. New improvement. THE MAYER MACHINE COMPANY, INC., 1313 Buffalo Road, Rochester, 11, N. Y. TF

FOR SALE—One 14 ft. Biggs Rotary Digester. Riveted type, good condition. Address Box 50-356 care Paper Trade Journal. J-27

FOR SALE—WET LAPS for box board. Delivered by truck loads. R. E. LEWIS & SON, Warrensburg, N. Y. A-3

FOR SALE—Clark Sheeter complete with backstand and layboy. Good operating condition. Very reasonably priced for quick sale. Contact BUTLER PAPER CORPORATIONS, 223 W. Monroe Street, Chicago, Illinois. J-27

MODERNIZE YOUR PAPER MACHINES WITH ENCLOSED DRIVES.

FOR SALE

FALK MOTOR REDUCERS

Motor driven Falk Drives with 50 KW Generator, convertor set and panel control.

1—7½ h.p. 45-1 connected to DC motor.
2—5 h.p. 63-1 connected to DC motor.
2—7½ h.p. 23.4-1 connected to DC motor.
2—15 h.p. 38.6-1 connected to DC motor.

FALK HERRINGBONE DOUBLE REDUCTION PAPER MACHINE DRIVES.

4—Right Angle, ratio 6.31, h.p. 48 to 110 depending on input speed.
1—Right Angle, ratio 7.14, h.p. 129 to 276 depending on input speed.
1—Straight Drive, ratio 3.12, h.p. 150.
1—Straight Drive, ratio 1.97, h.p. 250.

ROSS PAPER MACHINERY COMPANY
265 Passaic Street Newark, N. J.
Tel. HUmbolt 2-2177 J-13

FOR SALE

PRESSES:
2—Presses with Rolls 18" x 97" complete with frames, felt rolls, stretches, etc.
2—Presses 18" x 108" complete with frames, felt rolls, etc.
1—27" x 148" face, 1" New Rubber Pressure Roll.
1—24" x 134" face, Rubber Covered Pressure Roll with 2½" steel shell.
1—19¾" x 97" face Brass Press Roll with antifriction bearings.
1—17¼" x 160" Rubber Covered Press Roll.

CALENDERS:
1—6 Roll 82" Stack, bottom roll 16", 4—10" and 1—12", Angle Drive Included.

DRYERS:
5—48" x 160" face Pusey & Jones.
1—48"x116" face Bagley & Sewall.
2—36" x 86" face Sandy Hill.
1—36" x 90" Bagley & Sewall.
80—Gears for 48" Dia. Dryers.

CYLINDERS AND FOURDRINIERS:
1—36" x 92" Cylinder Mould, Cast Iron End Vat and Rubber Covered Couch. Antifriction Bearings.
1—36" x 72" Cylinder Mould with 10" Dia. Hollow Shaft Antifriction bearings.
1—30" x 74" Cylinder Mould.
1—36" x 85" Cylinder Mould—New Wires.
1—110" Moore & White Fourdrinier.

COUCH ROLLS:
1—16" x 85" approximately 1" rubber covered.
1—15½" x 74" approx. 1" rubber covered.
1—14" x 93", 1¼" soft rubber covering.

SCREENS:
1—22A Bird Screen with Copper Vat.
2—Bagley & Sewall 12 Plate Flat Screens.
4—Appleton 12 Plate, Plates cut .028.
1—Improved Packer 8 Plate.
1—Improved Packer 10 Plate.
1—Impco Rotary Knotter Screen.

JORDANS & REFINERS:
2—12" Weiner Refiners, anti-friction bearings.
1—Claflin Refiner.
1—Sturtevant Bale Pulper, antifriction bearings, complete with conveyor and speed reducer.
1—E. D. Jones Majestic designed for direct connecting.
1—E. D. Jones Standard with bottom bandless plug.

BEATERS:
1—Shartle 80" x 55", 100 Ton Breaker Beater anti-friction bearings.
1—E. D. Jones 67" x 60".
1—E. D. Jones 65" x 62".
2—E. D. Jones 50" x 44" Cast Iron Tubs.

STOCK PUMPS:
2—Black & Clawson, 12 x 18 Triplex Stock Pumps.
2—Black & Clawson 8 x 16 Triplex Stock Pumps.
1—8 x 12 Deming Triplex Stock Pumps.

CENTRIFUGAL PUMPS:
2—Warren Low Head Size 6DS 15½ 800 G.P.M., or 22' head.
2—Warren Size 4SOD12 antifriction brgs., 200 GPM, 50' head.
1—Domestic 4 x 4 sludge or heavy density stock pump 200 G.P.M., 50' head.
1—Deming Sump Pump direct conn. to Meter, 75 GPM @ 45' head.

SUCTION ROLL AND SUCTION BOXES:
1—10" x 134" Downingtown Suction Felt Roll, 130" drilled face.
1—18" Dia., 96" face (Millspaugh).
1—18" Dia., 114" face (Millspaugh).
13—Brass Suction Boxes: 3—154"; 2—108"; 2—110"; 2—90"; 4—96".

WINDERS:
1—Moore & White 4 Drum 126", antifriction bearings. Slitter attachment.
1—116" Two Drum Winder Cameron Type.
2—Bagley & Sewall Warren Type, 1—116"; 1—110".
1—110" Pusey & Jones Slitter & Winder, antifriction bearings.

TRIMMERS:
1—Smith & Winchester 562 Undercut Trimmer. Very Good!

CUTTERS & LAYBOYS:
1—Beloit Duplex Sheet Cutter 102" with Duplex Slitting equipment.
1—Moore & White layboy, four pile, three section for 102" trim.

FELT ROLLS:
NEW and USED BRASS FELT ROLLS!

OSBORNE PAPER MILL EQUIPMENT CORP.
FULTON, NEW YORK TEL. 54
J-27

FOR SALE

FOR SALE—Slitter, Rewinder 34" web—3 spindle type—extra shafts—fitted with 2-12" diameter cooling drums—new condition—never in production—with or without 5 h.p. & 3 h.p. D.C. motors and 7½ h.p. Reliance V.S. control unit. Address Box 50-340 care Paper Trade Journal. N-C

FOR SALE—Miller Wrapping and Sealing Machine. Good operating condition. Very reasonably priced for quick sale. Contact BUTLER PAPER CORPORATIONS, 223 W. Monroe Street, Chicago, Illinois. J-27

FOR SALE—34", 50", 64", 82" & 96" Rotary Sheeters; 50" & 64" Seybold Paper Cutters; 28" x 41" Thomson Platen Die Cutter; 46" x 62" Scott 3 color web feed sheet printer. Address Box 50-301 care Paper Trade Journal. TF

WANTED

WANTED—Brightwood Box Machine, Shredders, Evaporators, Generators and Boilers, Slitters, Cutters, Hydraulic presses, Sheridan Presses, Dryers. Address Box 50-193 care Paper Trade Journal. TF

WANTED—One 13" x 13½" Hudson Sharp 3 Deck Quarter Fold Paper Napkin Machine with Embosser. Must be in running condition. Address Box 50-359 care Paper Trade Journal. A-10

WANTED—W & P Shredders, Evaporators, Generators and Boilers, Slitters, Cutters, Hydraulic presses, Sheridan Presses, Dryers. Address Box 50-18 care Paper Trade Journal. TF

WANTED

WANTED—One Hamblet revolving cutter—40" to 68" knife. Other makes considered.
One Nash Vacuum Pump, No. L-4.
One Cameron Winder, 62", No. 10 or better. Advise condition and best prices. Advise Diam. Rolls it will make.
1—68" to 70" face by 36" diameter Dryer.
2—60" to 62" face by 36" diameter Dryers.
Address Box 50-226 care Paper Trade Journal. TF

WANTED—18" diameter cast iron dryers 128" to 134" face. Address Box 50-354 care Paper Trade Journal. A-31

WANTED—English or Pope type reel 84" to 120" width. Address Box 50-367 care Paper Trade Journal. A-31

SALES REPRESENTATION

PAPER & BOARDS FOR EXPORT

London firm of paper agents with branch offices in Paris and Vienna and sales organization covering Great Britain, Dominions, Near and Far East, Continent of Europe, wishes to represent American mills and/or exporters for all types of paper and boards.
Box 50-342 care Paper Trade Journal. J-27

CLASSIFIED ADS BRING RESULTS

Fewer Rejects! Better Paper!

STICKLE MICRO ADJUSTABLE ORIFICE with INDICATING THERMOMETER provides visual temperature indication and accurate needlepoint regulation of condensate flow. Keylock and shield prevent unauthorized change. Assures better paper! Reduces rejects! Write for *free* Bulletins 160 and 160A.

STICKLE STEAM SPECIALTIES CO.
2223 Valley Ave. Indianapolis, Indiana

THE CARTHAGE MACHINE COMPANY
CARTHAGE, NEW YORK
Manufacturer of
Machinery and Equipment for Mechanical and Chemical Pulp Mills and Special Machinery

HUBINGER OK BRAND

Dependable Quality for 69 years . . .
STARCH for TUB SIZING
BEATER SIZING
THE HUBINGER CO.
Keokuk, Ia. Est. 1881

WHERE TO BUY

ABRASIVES
Monsanto Chemical Co.
Norton Co.

ADHESIVES
American Anode Incorporated
American Cyanamid Company
Plastics & Resins Division
E. I. Du Pont De Nemours & Co., Inc.
The Goodyear Tire & Rubber Company
Monsanto Chemical Co.
National Starch Products, Inc.
Nopco Chemical Co.
Stein, Hall & Co., Inc.

AGITATORS
American Paper Machy. & Engrg. Works, Inc.
Appleton Machine Co.
Dilts Machine Works, Inc.
Dorr Company
Downingtown Mfg. Co.
Hardinge Company, Inc.
E. D. Jones & Sons Co.
D. J. Murray Mfg. Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Valley Iron Works Co.
Shartle Brothers Machine Co.

ALLOYS
Michigan Steel Casting Co.

ANTIFOAM
American Cyanamid Company
Industrial Chemicals Division
National Aluminate Corp.
Nopco Chemical Co.

APRON CLOTH
Williams-Gray Co.

BAG MACHINES
Dilts Machine Works
Potdevin Machine Co.
The Sandy Hill Iron & Brass Works
Smith Winchester Mfg. Co.
Weber, Herman G., & Co., Inc.

BARK BURNER
Nichols Engrg. & Research Corp.

BARK PRESS
American Defibrator Co.

BARKERS AND CHIPPERS
Allis-Chalmers Mfg. Co.
Appleton Machine Co.
Carthage Machine Co.
D. J. Murray Mfg. Co.
Valley Iron Works Co.

BARS
Dilts Machine Works
E. D. Jones & Sons Co.
The Moore & White Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

BASIC WEIGHT SCALES
Thwing-Albert Instrument Co.

BEARINGS
Black Clawson Company
E. D. Jones & Sons Co.
Link Belt Company
Magnus Metal Corp.
The Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Timken Roller Bearing Co.
Valley Iron Works Co.

BEATERS AND JORDANS
American Paper Machy. & Engrg. Works, Inc.
The Appleton Machine Co.
Black Clawson Company
Dilts Machine Works
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Morden Machines Co.
J. J. Ross Company
Ross Paper Machy. Co.
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

BED PLATES
Bahr Brothers Mfg. Co.
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Fagrel-Birmingham Co., Inc.
E. D. Jones & Sons Co.
Lukenweld Div., Lukens Steel Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

BELTING
Alexander Brothers
Allis-Chalmers Mfg. Co.
The Goodyear Tire & Rubber Company
Link Belt Company

BLEACHING AGENTS
E. I. Du Pont De Nemours & Co., Inc.
General Dyestuff Corp.
Rohm & Haas Co.
Virginia Smelting Co.

BLEACHING APPARATUS
E. D. Jones & Sons Co.
Perkins & Sons, Inc., B. F.
Moore & White Co.
Niagara Alkali Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

BLOW PIPES & PITS
Carthage Machine Co.
Kalamazoo Tank & Silo Co.
Moore & White Co.
Murray Mfg. Co., D. J.
Walworth Company

BOILERS
Babcock & Wilcox Co.

BOTTOMS
Kalamazoo Tank & Silo Co.
Valley Iron Works Co.

BOXBOARD SCALES
Thwing-Albert Instrument Co.

BRUSH ROLLS
M. W. Jenkins Sons, Inc.

BRUSHES
M. W. Jenkins Sons, Inc.

BURSTING TESTERS
B. F. Perkins & Son Inc.
Testing Machines, Inc.

CALENDERS
Black Clawson Company
Downingtown Mfg. Co.
Farrel-Birmingham Co., Inc.
Lobdell Co.
Edward J. McBride
The Moore & White Co.
Perkins & Sons, Inc., B. F.
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Waldron Corp., John

CARRIER ROPE
Williams-Gray Co.

CASEIN
American Cyanamid Co., Industrial Chem. Div.
Bunge Pulp & Paper Co.
Hercules Powder Co.

CASTINGS
American Cast Iron Pipe Co.
Appleton Machine Co.
Black Clawson Company
Babcock & Wilcox Co.
Carthage Machine Co.
Dilts Machine Works
Downingtown Mfg. Co.
Farrel-Birmingham Co.
Hamblett Machine Co.
Hardinge Company, Inc.
Lobdell Co.
Magnus Metal Corp.
Michigan Steel Casting Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

OUTSTANDING performance like this described in Bulletin 2302 is only one of the reasons why 29 leading pulp and paper companies have recently placed repeat orders for Blaw-Knox Pulpwood Grapples. They know from experience that low cost dependable rehandling of symmetrically stacked pulpwood or logs can be obtained with Blaw-Knox Grapples designed and built to meet the needs of the Paper Industry.

Bulletin 2302 tells about them. Send for your copy today.

BLAW-KNOX DIVISION
of Blaw-Knox Company
2055 Farmers Bank Bldg., Pittsburgh 22, Pa.

BLAW-KNOX GRAPPLES
FOR PULPWOOD AND LOGS

POTDEVIN
self-opening-square
GROCERY BAG MACHINES

Standard machine for converting rolls of Kraft or sulphite paper into finished, trade-marked bags.

Models for producing the popular grocery bag range from ¼ lb. to 35 lb. inclusive. Potdevin Aniline Printing Press connected to Bag Machines will turn out printed bags in one operation from the unprinted roll.

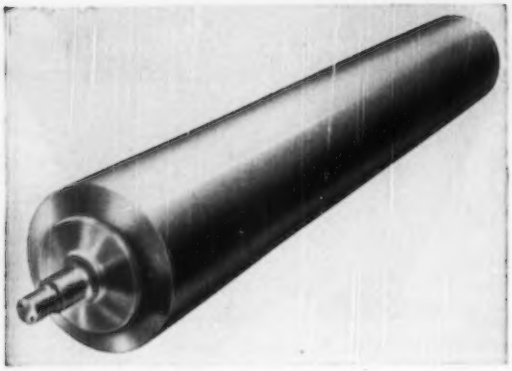
High speeds (from 275 to 450 bags per minute) quick change-over from size to size, and a minimum of adjusting, make POTDEVIN machines the favorite in bag plants all over the world.

Consult our engineers on any problem.
No obligation. Literature on request.

POTDEVIN MACHINE CO.
1223 38th Street Brooklyn 18, N. Y.

Designers and manufacturers since 1893 of equipment for Bag Making, Printing, Coating, Gluing and Labeling.

POTDEVIN



McBRIDE brings you a
Complete* ROLL *Service

PRODUCTION: Modern production facilities for large and small rolls of all types in metal, wood, and rubber covered.

ENGINEERING: McBride engineers work with you to solve individual roll problems, then supervise production to assure rolls that meet your exact needs.

MAINTENANCE: A special department for maintenance and repair work is your assurance of prompt, top quality work.

Table Rolls	Couch Rolls	Stainless Steel Rolls
Wire Carrying Rolls	Press Rolls	Wood Rolls
Felt Carrying Rolls	Brass Rolls	Repairs to Rolls

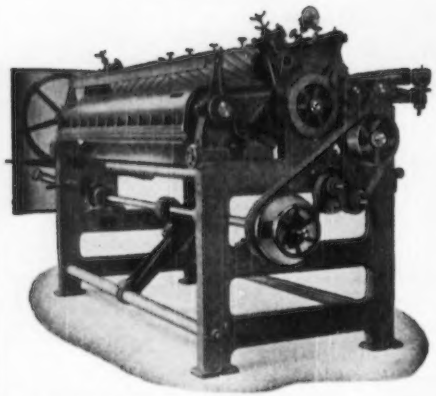
Mc BRIDE

Edward J. McBride Co., Inc. • 1394 Adams Ave., Phila. 24, Pa.

ROLLS OF ALL TYPES FOR EVERY PURPOSE

MODEL 28

ROLLER BEARING CUTTER



HAMBLET MACHINE CO.
LAWRENCE, MASS.

MAKERS OF

SINGLE, DUPLEX AND DIAGONAL PAPER CUTTERS
CUTTER KNIVES, PATENT TOP SLITTERS

WHERE TO BUY

Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Walworth Company

CENTRIFUGAL MACHINERY
Bird Machine Co.
Nichols Engrg. & Research Corp.
Ross, J. O., Engrg. Co.
Shartle Brothers Machine Co.

CHAINS
Link Belt Company

CHEMICAL COTTON PULP
Hercules Powder Co.

CHEMICALS
American Anode, Incorporated
American Cyanamid Co., Industrial Chem. Div.
Bunge Pulp & Paper Co.
Calco Chemical Co.
Calgon, Inc.
Cowles Chemical Company
Diamond Alkali Co.
Dow Chemical Company
E. I. du Pont de Nemours & Co., Inc.
General Dyestuffs Corp.
Gegy Co., Inc.
Gotsman & Co.
Hercules Powder Co.
Hooker Electrochemical Co.
The Kinsley Chemical Company
Monsanto Chemical Company
National Aluminate Corp.
Niagara Alkali Company
Nopco Chemical Co.
Pittsburgh Plate Glass Co., Columbia Chemical Division
Rohm & Haas Co.
Solvay Sales Corp.
Virginia Smelting Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

CHESTS
E. D. Jones & Sons Co.
Kalamazoo Tank & Silo Co.
Shartle Bros. Mch. Co.

CHUCKS
Efficiency Engrg. Co.

CLEANING MATERIALS
American Cyanamid Company Industrial Chemicals Division
Cowles Chemical Company
The Dow Chemical Company
E. I. du Pont de Nemours & Co., Inc.
General Dyestuff Corp.
Monsanto Chemical Company
Nopco Chemical Co.
Pittsburgh Plate Glass Co.
Solvay Sales Corp.
Wyandotte Chemicals Corp., J. B. Ford Division

CLUTCHES
Appleton Machine Co.
Black Clawson Company
Farrel-Birmingham Co.
Hardinge Company, Inc.
Hudson Sharp Machine Co.
Rodney Hunt Machine Co.
Link Belt Company
Moore & White Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
Shartle Bros. Mch. Co.

COATING MACHINERY
Dilts Machine Works
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Hudson Sharp Machine Co.
The Mayer Machine Co., Inc.
Moore & White Co.
Pordevin Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corporation, John
Weber, Herman G., & Co., Inc.

COATING MATERIALS
American Anode Div.
American Cyanamid Company Industrial Chemicals Division
E. I. Du Pont De Nemours & Co., Inc.
The Goodyear Tire & Rubber Company
Hercules Powder Co.
J. M. Huber Corp.
Monsanto Chemical Company
National Wax Co.
Nopco Chemical Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

COGS
The N. P. Bowsher Co.

COMPOUND LATICES
American Anode Div.

COMPRESSORS
Allis-Chalmers Mfg. Co.
Nash Engineering Co.
Roots-Connersville Blower Corp.

CONDENSATE FILTERS
Hungerford & Terry, Inc.
The Permutit Company

CONSISTENCY REGULATORS
Bird Machine Company
DeZurik Shower Company
Paper & Industrial Appliances

CONSTRUCTION CONTRACTORS
C. M. Guest & Sons

CONSULTING ENGINEERS
Birk, F. Paul
Black Clawson Company
Dilts Machine Works
Ebasco Services
Frank W. Egan & Co.
Gibbs, Ralph
Alvin H. Johnson & Co., Inc.
Main, Inc., Chas. T.
Roderick O'Donoghue
The Rust Engrg. Co.
Shartle Bros. Mch. Co.
J. E. Sirrine & Co.
John Waldron Corp.
H. G. Weber & Co., Inc.

CONTINUOUS DIGESTER
Paper & Industrial Appliances

CONTROLLERS
Askania Regulator Company
Black Clawson Company
The Brown Instrument Co.

CONTROLS
The Bristol Company
The Brown Instrument Co.
Johnson Corp.
Shartle Bros. Mch. Co.
Stickle Steam Specialties Co.

CONVERTING MACHINERY
John Waldron Corp.
Dilts Machine Works

CONVEYORS
Black Clawson Company
Industrial Brownhoist Corp.
Link Belt Company
Murray, D. J., Mfg. Co.
Ross Engineering Corp., J. O.
Shartle Brothers Mch. Co.

CORES
Elixman Paper Co.
Rodney Hunt Machine Co.
Smith & Winchester Mfg. Co.
Sonoco Products Co.

CORROSION RESISTANT
Amercoat Corporation

COTTON LINTER
Railway Supply & Mfg. Co.

COUPLINGS
Black Clawson Company
Farrel-Birmingham Co., Inc.
E. D. Jones & Sons Co.
Link Belt Company
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Thomas Flexible Coupling Co.
Valley Iron Works
Waldron Corp., John

CRANES
Cleveland Crane & Engrg. Co
Industrial Brownhoist Corp.
Link Belt Company
Whiting Corp.

CURL TESTER
Thwing-Albert Instrument Co.

CUTTERS
Black Clawson Company
Dilts Machine Works
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Harris-Seybold Co.
Moore & White Co.
Perkins & Son, Inc., B. F.
The Sandy Hill Iron & Brass Works
The Smith & Winchester Mfg. Co.
Taylor, Stiles & Co.

CYLINDERS
M. W. Jenkins Sons, Inc.
National Tube Co.

DAMPENERS
Perkins & Son, Inc., B. F.
Valley Iron Works Co.

DECKLE WEBBING
Williams-Gray Co.

DEFIBRATORS
American Defibrator Co.

DE-INKING
Dilts Machine Works
General Dyestuff Corp.
Kinsley Chemical Co.
Roderick O'Donoghue
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

DEINKING CHEMICALS
E. I. Du Pont De Nemours & Co., Inc.
General Dyestuff Corp.
Kinsley Chemical Co.
Monsanto Chemical Company
Nopco Chemical Co.

DE-MINERALIZING EQUIPMENT
Hungerford & Terry, Inc.
The Permutit Company

DEMULSIFIERS
Wyandotte Chemicals Corp., Michigan Alkali Div.

DENSOMETERS
Bunge Pulp & Paper Co.
W. & L. E. Gurley

DESIGN CONSTRUCTION
Ebasco Services

DETERGENTS
American Cyanamid Company Industrial Chemicals Division
Calgon, Inc.
Cowles Chemical Co.
Gamlen Chemical Company
General Dyestuff Corp.
Monsanto Chemical Company
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

DEWAXING CHEMICALS
American Cyanamid Company Industrial Chemicals Division
General Dyestuff Corp.
Nopco Chemical Co.

DIFFERENTIAL SCALES
Thwing-Albert Instrument Co.

DIGESTERS
Babcock & Wilcox Co.
Chicago Bridge & Iron Co.
Lukenweld
Pusey & Jones Corp.

DIGESTERS (Continuous)
Paper & Industrial Appliances

DIRTEC
Bird Machine Co.

DISPERSING AGENTS
Calgon, Inc.
General Dyestuff Corp.
Monsanto Chemical Company
National Aluminate Corp.
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

DOCTORS
Bird Machine Company
Black Clawson Company
Downingtown Mfg. Co.
Lobdell Co.
Lodding Engineering Corp.
The Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

DOCTOR BLADES
Bird Machine Company
Lodding Engrg. Corp.
The Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

DRIERS
Black Clawson Company
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Hardinge Company, Inc.
Lukenweld
The Moore & White Co.
Murray Mfg. Co., D. J.
J. J. Ross Company
Red-Ray Mfg. Co., Inc.
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

DRIVES
Allis-Chalmers Mfg. Co.
Appleton Machine Co.
Bird Machine Co.
Black Clawson Company
Dilts Machine Works
Downingtown Mfg. Co.
Fairbanks, Morse & Co.
Farrel-Birmingham Co.
General Electric Company
Gibbs-Brower Company, Inc.
Rodney Hunt Machine Co.
Link Belt Company
Moore & White Co.
Murray, D. J., Mfg. Co.
Pusey & Jones Corp.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Bros. Mch. Co.
Valley Iron Works Co.
Westinghouse Electric Corp.

DRYER DRAINAGE
Stickle Steam Specialties Co.

DRYER ROLL PYROMETER
Thwing-Albert Instrument Co.

DUSTERS
Appleton Machine Co.
Downingtown Mfg. Co.
Frank W. Egan & Co.
M. W. Jenkins Sons, Inc.
E. D. Jones & Son Co.
Moore & White Co.
D. J. Murray Mfg. Co.
John Waldron Corp.

DUSTING BRUSHES
M. W. Jenkins Sons, Inc.

DYESTUFFS
American Cyanamid Company, Calco Chemical Div.
Bunge Pulp & Paper Co.
Ciba Company
E. I. du Pont de Nemours & Co., Inc.
Geigy Co., The
General Dyestuffs Corp.
National Aniline Division, Allied Chemical & Dye Corp.

ELECTRIC HYGROMETER
Thwing-Albert Instrument Co.

EMBOSSING MACHINES
Dilts Machine Works
John Waldron Corp.

EMBOSSING ROLLS
The Appleton Machine Co.
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Northern Engraving & Mch. Co.
B. F. Perkins & Son, Inc.
John Waldron Corp.

EMULSIFIERS
General Dyestuff Corp.
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp.

ENZYMES
Rohm & Haas Co.
Vanderbilt Co., R. T.

EVAPORATORS
Davis Engrg. Corp.
Goslin-Birmingham Mfg. Co. Inc.
Murray, D. J., Mfg. Co.
Swenson Evaporator Co., Div. of Whiting Corp.

EXPANDERS
Mount Hope Machinery Co.

FANS
General Electric Co.
B. F. Perkins & Son, Inc.
Ross Engineering Co., J. O.

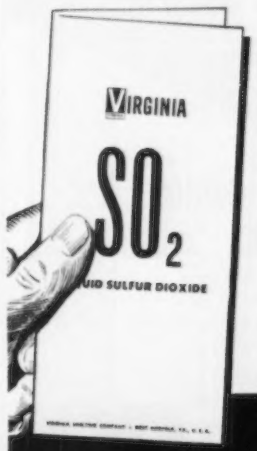
FEEDERS
Hardinge Company, Inc.
Merrick Scale Mfg. Co.
Leeds & Northrup
The Permutit Company

FELTS
Appleton Woolen Mills
Asten-Hill Mfg. Co.
Draper Bros. Corp.
Huyck & Son, F. C.
Lockport Felt Co.
Mt. Vernon-Woodbury Mills, Inc.
Morey Paper Mill Supply Co.
Shuler & Benninghofen
Waterbury Felt Co.
Waterbury, H., & Sons Co.
Williams-Gray Co.

More Profitable Paper Products

Sulfur dioxide (SO_2) is a "must" in the production of whiter, brighter pulp or paper. You need the competitive advantages imparted by "Virginia" Liquid Sulfur Dioxide . . . the general upgrading of quality, the several additional points of brightness.

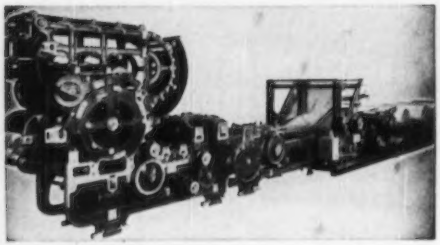
"Virginia" Liquid Sulfur Dioxide adjusts the pH and acts as a reducing agent, decolorizer, and antichlor. Whiteness is improved and color reversion retarded. Equipment maintenance costs are cut. In this effective application of its SO_2 to paper and pulp making, "Virginia" scores one of its greatest successes in 29 years of service to more than 40 industries.



If you operate a mill using groundwood pulp or sulfite pulp, or one turning out bleached or semi-bleached kraft, your products will be better, more salable—command higher prices—if you use "Virginia" Liquid SO_2 in your processes. Send today for our descriptive folder on sulfur dioxide. VIRGINIA SMELTING COMPANY, West Norfolk 3, Virginia.

Field Offices:
NEW YORK
BOSTON
DETROIT
CHICAGO
PHILADELPHIA
ATLANTA

VIRGINIA Chemicals
SINCE 1898



Machine illustrated is a large S.O.S. Multiwall unit capable of making a maximum size bag 19" x 14" x 64".

Weber machines are known throughout the world.

Write in requesting our bulletin describing the complete line of Weber machines.

H. G. WEBER & CO., INC.

KIEL, WIS., U.S.A.

MEMBER, Packaging Machinery Manufacturers Institute.

United Blacks

DIXIE • KOMOS PARIS BLACKS

Carbon blacks for all paper and board stocks—outstanding soft texture, particle fineness and jet black color. Takes well to the fiber, shows high retention.

Best for performance in the Beater and Jordan because of ease of wetting and ready dispersion in the furnish.

KOSMOS BRAND DIXIE BRAND

UNITED CARBON COMPANY, INC.

CHARLESTON, WEST VIRGINIA

NEW YORK • AKRON • CHICAGO • BOSTON

AND OTHER PRINCIPAL CITIES

CANADA: CANADIAN INDUSTRIES, LIMITED

WHERE TO BUY

FELT CLEANERS
Calgon, Inc.
Cowles Chemical Co.
General Dyestuff Corp.
Nopco Chemical Co.

FELT CONDITIONERS
Bird Machine Co.
The Sandy Hill Iron & Brass Works

FELT GUIDES
Black Clawson Company
Frank W. Egan & Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John

FILLERS
American Cyanamid Company, Industrial Chemicals Division
A. M. Meincke & Son, Inc.
Vanderbilt Co., R. T.
Wyandotte Chemicals Corp., Michigan Alkali Div.

FILTERS
Bird Machine Company
Hardinge Company, Inc.
J. M. Huber Corp.
Hungerford & Terry, Inc.
Johnson Corp.
Moore & White Co.
J. O. Ross Engrg. Corp.
The Sandy Hill Iron & Brass Works
Walworth Company

FITTINGS
Crane Company
Shartle Bros. Mch. Co.
Walworth Company

FLEXIBLE COUPLINGS
John Waldron Corp.

FLOORING, GRATING AND TREADS
The Goodyear Tire & Rubber Company
Norton Co.

FLOW BOXES, STAINLESS-CLAD
Lukens Steel Co.
The Sandy Hill Iron & Brass Works

FORK LIFT TRUCKS
Towmotor Corp.

FORMATION
Thwing-Albert Instrument Co.

FORMING MACHINES
Black Clawson Company
Downingtown Mfg. Co.
The Moore & White Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

FREENESS TESTERS
Testing Machines, Inc.

GASKETS
The Goodyear Tire & Rubber Company

GEARS
Black Clawson Company
De Laval Steam Turbine Co.
Downingtown Mfg. Co.
Frank W. Egan & Co.
Farrel-Birmingham Co.
E. D. Jones & Sons Co.
Link Belt Company
Moore & White Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Westinghouse Electric Corp.

GRINDERS
Bridgeport Safety Emery Wheel Company
Carthage Machine Co.
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Lobdell Co.
Norton Company
Samuel C. Rogers and Company
The Sandy Hill Iron & Brass Works

GRINDING WHEELS
Norton Company

GUIDES, WEB
The Moore & White Co.
Mount Hope Machinery Co.
Bound Brook Engrg. Co.
John Waldron Corp.

GUMMING MACHINES
Dilts Machine Works
The Sandy Hill Iron & Brass Works

GUMS
National Starch Products, Inc.
Stein-Hall Co., Inc.

HEADS
Babcock & Wilcox Co.
Lukens Steel Company

HEAT EXCHANGERS AND RECOVERY SYSTEMS
Davis Engrg. Corp.
Stickle Steam Specialties Co.
Westinghouse Electric Corp.

HEATING, VENTILATING & AIR CONDITIONING
The Appleton Machine Co.
Davis Engrg. Corp.
E. D. Jones & Sons Co.
General Electric Co.
Leeds & Northrup
D. J. Murray Mfg. Co.
Red-Ray Mfg. Co., Inc.
Ross Engineering Corp., J. O.
Stickle Steam Specialties Co.
Valley Iron Works Co.
Westinghouse Electric Corp.

HOSE (Air, Water, Suction, etc.)
The Goodyear Tire & Rubber Company

HUMECTANTS
Aktivin Division, Heyden Chemical Corp.
Nopco Chemical Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

IMPREGNANTS
American Cyanamid Company Industrial Chemicals Division
American Anode Div.

INDENTING MACHINES
Dilts Machine Works

INDUSTRIAL TRACTORS
Towmotor Corp.

INKOMETER
Thwing-Albert Instrument Co.

INSTRUMENTS, TESTING AND MEASURING
Bauer Brothers Co.
Beckman Instruments, Inc.
Bunge Pulp & Paper Co.
N. P. Bowsher
General Electric Company
W. & L. E. Gurley
Leeds & Northrup Company
National Technical Laboratories
B. F. Perkins & Son
Photovolt Corp.
Taylor Instrument Cos.
Testing Machines, Inc.
Thwing-Albert Instrument Co.

JOINTS
Johnson Corp.
Shartle Bros. Mch. Co.

JORDAN FILLINGS
Appleton Machine Co.
Bahr Brothers Mfg. Co.
E. D. Jones & Sons Co.
Shartle Bros. Mch. Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

KNIVES
Black Clawson Company
Dilts Machine Works, Inc.
Hamblet Machine Co.
Heppenstall Company
E. D. Jones & Sons Co.
The Moore & White Co.
Taylor Stiles & Co.
Valley Iron Works Co.

KNOT BORING MACHINES
DeZurik Shower Company

KRAFT WRAPPING PAPERS
Canadian Newsprint Supply Co.

LABORATORY CORRUGATOR
Thwing-Albert Instrument Co.

LABORATORY EQUIPMENT
Appleton Machine Co.
Bauer Brothers Co.
The Biggs Boiler Works Co.
Bird Machine Company
Dilts Machine Works
W. & L. E. Gurley
E. D. Jones & Sons Co.
Leeds & Northrup Company
National Technical Laboratories

Taylor Instrument Companies
Testing Machines, Inc.
Valley Iron Works Co.
John Waldron Corp.

LAMINATING COMPOUND
National Wax Company

LAMINATING MACHINES
Dilts Machine Works
John Waldron Corp.

LAY BOYS
Dilts Machine Works
Gibbs-Brower Company, Inc.
Hamblet Machine Co.
Moore & White Co.

LUBRICANTS
Sinclair Refining Co.
Socony-Vacuum Oil Co.
Sun Oil Company
The Texas Company
Tide Water Associated Oil Co.

MAGAZINE REELS
Dilts Machine Works (Kohler Systems)

MATERIALS HANDLING
Cleveland Crane & Engrg. Co.
Dilts Machine Works
Industrial Brownhoist
Shartle Bros. Mch. Co.
Stephens-Adamson Mfg. Co.
The Wellman Engrg. Co.

MICROMETERS & CALIPERS
Farrel-Birmingham Co.
Lobdell Co.
Testing Machines, Inc.

MICRO-CRYSTALLINE WAXES
Bunge Pulp & Paper Co.
National Wax Company

MOISTURE CONTENT CONTROL
Stickle Steam Specialties Co.

MOTORS AND GENERATORS
Allis-Chalmers Mfg. Co.
Fairbanks, Morse & Co.
General Electric Company
Reliance Electric & Engrg. Co.

NEWSPRINT
Canadian Newsprint Supply Co.

NICKEL AND NICKEL ALLOYS
The International Nickel Co.

NOZZLES
Link Belt Company

PACKING BOXES
Johnson Corporation
The Moore & White Co.
Shartle Brothers Machine Co.

PAPER MACHINES
Bagley & Sewall Co.
Black-Clawson Company
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Lukenweld
Moore & White Co.
Pusey & Jones Corp.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.

PAPER MACHINE SLICES
Black Clawson Company
E. D. Jones & Sons Co.
The Moore & White Co.
The Sandy Hill Iron & Brass Works
Valley Iron Works Co.

PAPER TUBE MACHINERY
Dietz Machine Works
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Hudson Sharp Machine Co.
Langston Co., Samuel M.

PARAFFINE WAXES
National Wax Company

PARAFFIN WAX EMULSIONS
Nopco Chemical Co.

PASTING MACHINES
Black Clawson Company
Dilts Machine Wks.
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Murray, D. J., Mfg. Co.
Moore & White Co.
Potdevin Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John

PERFORATED METAL
Allis-Chalmers Mfg. Co.

PETROLATUMS
National Wax Company

pH METERS
Thwing-Albert Instrument Co.

PIGMENTS
Ferro Enamel Corp.

PIPE
Armco Drainage & Metal Products, Inc.
Babcock & Wilcox Co.
Crane Company
Michigan Steel Casting Co.
National Tube Co.
Walworth Company

PIPE FITTINGS
Armco Drainage & Metal Products Co.
Crane Company
Michigan Steel Casting Co.
Walworth Co.

PIPE MARKERS
W. H. Brady Co.

PITCH CONTROL
American Cyanamid Company Industrial Chemicals Division
General Dyestuff Corp.
Monsanto Chemical Company
National Aluminate Corp.
Nopco Chemical Co.
Rohm & Haas Co.

PLASTICIZERS
American Cyanamid Company Industrial Chemicals Division
Aktivin Division, Heyden Chemical Corp.
Nopco Chemical Co.

PLATERS
Gibbs-Brower Company, Inc.
Perkins & Son, Inc., B. F.

PLATES
Armco Steel Corp.
Babcock & Wilcox Co.
J. O. Ross Engrg. Corp.
Lukenweld Division
Lukens Steel Company
Timken Roller Bearing Co.

PLUGS
The Appleton Machine Co.
Black Clawson Company
E. D. Jones & Sons Co.
Shartle Brothers Machine Co.

PRECISION SAMPLE CUTTER
Testing Machines, Inc.
Thwing-Albert Instrument Co.

PRESERVATIVES
E. I. du Pont de Nemours & Co
General Dyestuff Corp.

PRESSURE VESSELS STEEL AND ALLOY
Babcock & Wilcox Co.

PRESSURE VESSELS
Chicago Bridge & Iron Co.

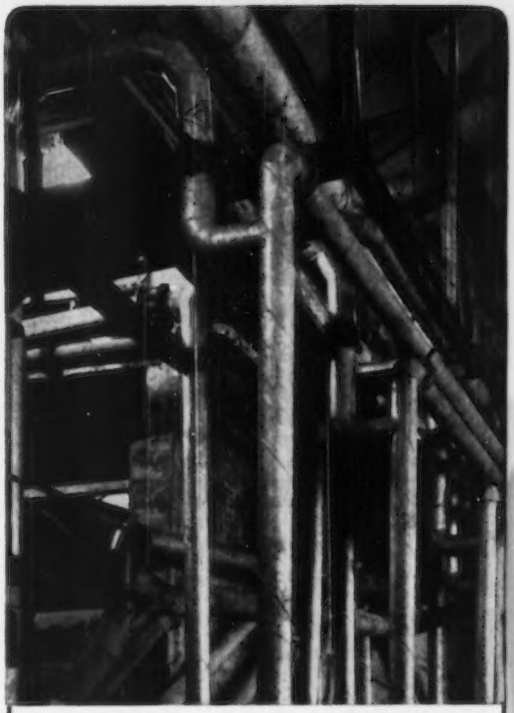
PRESSES
Black Clawson Company
Dietz Machine Works
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Hudson-Sharp Machine Co.
The Moore & White Co.
Paper Converting Machine Co Inc.
Potdevin Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.
Waldron Corp., John
H. G. Weber & Co., Inc.
Williams Apparatus Co.

PULP CLASSIFIER
The Bauer Bros. Co.
Thwing-Albert Instrument Co.

PULP CLEANERS
Corp.
Nichols Engrg. & Research

PULP STOCK VALVES
Crane Company
Record Fdy. & Mach. Co.
Shartle Brothers Machine Co.

PULPERS
American Paper Machy. & Engrg Works, Inc.
Bauer Brothers Co.
Dilts Machine Works
E. D. Jones & Sons Co.
Shartle Brothers Machine Co.



Make This "Economy Check" ON NEW PIPING

Here's a good way to make an "economy check" when you need piping. Just submit the plans to Armco. Chances are you'll be pleasantly surprised at the savings you can make by redesigning with Armco Spiral Welded Pipe.

For one thing, Armco's custom-built method of fabricating pipe saves hours of tedious assembly. With fittings welded to straight pipe runs even the most complicated jobs fit with precision accuracy. Then too, material costs are low when you use Armco Pipe. The shop-fabricated fittings eliminate at least a pair of flanges at every bend. Here savings up to 30% are not unusual. And maintenance will be trivial. Fewer flanges naturally mean less chance for costly leaks.

Sizes of Armco Pipe range from 6 to 36 inches with wall thicknesses from 5/64- to ½-inch. Write for complete data. Armco Drainage & Metal Products, Inc., Welded Pipe Sales Division, 4260 Curtis St., Middletown, Ohio. Subsidiary of Armco Steel Corporation. Export: The Armco International Corporation.

ARMCO WELDED STEEL PIPE

CHAS. T. MAIN, INC.
CONSULTING ENGINEERS
Process Studies Design Specifications and Engineering Supervision
PULP AND PAPER MILLS
Steam Hydraulic and Electrical Engineering
Reports, Consultation and Valuations
80 Federal Street Boston 10, Mass.

C. M. GUEST & SONS
Builders
GREENSBORO, N. C. ANDERSON, S. C.
Paper & Pulp Mills • Waste Disposal • Water Filtration
Steam Power Plants • Process Piping • Textile Mills
SERVING THE INDUSTRIAL SOUTH for MORE THAN FIFTY YEARS

Appleton FELTS -for uniformity
APPLETON WOOLEN MILLS. APPLETON, WISCONSIN

THE RUST ENGINEERING COMPANY
Engineers and Constructors
Pittsburgh, Pennsylvania
Complete Service
for
PULP AND PAPER MILLS—PLANTS AND FACILITIES
DESIGN, CONSTRUCTION, MODERNIZATION

"GIANT" RAG CUTTERS
for both large and small
PAPER MILLS
Capacities from one to five tons an hour.
10 Bridge St., Riegelsville, N. J.
TAYLOR-STILES and Company
CUTTING MACHINES & KNIVES

DEINKING — DECOLORIZING
COOKING PROCESSES
K-121-B and K-140
ENGINEERING
THE KINSLEY CHEMICAL COMPANY
4538 WEST 130th STREET CLEVELAND 11, OHIO

MILL COGS
We make a specialty of "Ready Dressed" cogs which are READY TO RUN the moment driven and keyed. Write for circular "G" and instruction sheets free.
The N. P. BOWSHER CO., South Bend, Ind.

MISCO
STAINLESS STEEL CASTINGS
for all equipment exposed to corrosion by sulphite acids or other corrosive agents
MICHIGAN STEEL CASTING CO., DETROIT 7, MICH.

WHERE TO BUY

PULPS
Brown Company
Bunge Pulp & Paper Co.
Gottesman & Co., Inc.
Lyddon & Co. (America), Inc.
Parsons & Whittemore, Inc.
Perkins-Goodwin Co.
Price & Pierce, Ltd.
Pulp and Paper Trading Co.
Pulp Sales Corp.
Rustigouche Co., Ltd.

PULPSTONES
Norton Company

PULP TESTERS
Paper and Pulp Testing Laboratories

PUMPS
American Paper Machy. & Engrg. Works, Inc.
Allis-Chalmers Mfg. Co.
Black Clawson Company
DeLaval Steam Turbine Co.
Dorr Company
Downingtown Mfg. Co.
Fairbanks, Morse & Co.
Gibbs-Brower Company, Inc.
Johnson Corp.
Moore & White Co.
Nash Engineering Co.
Roots Connersville Blower Corp.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.

RADIANT BURNERS
Red-Ray Mfg. Co., Inc.

RAG COOKING PROCESSES
The Kinsley Chemical Company
General Dyestuff Corp.
Rohm & Haas Co.

RAG CUTTERS
Gibbs-Brower Company, Inc.
B. F. Perkins & Son, Inc.
Taylor-Stiles & Co.

RECAUSTICIZING PLANTS
The Dorr Company

RECOVERY SYSTEMS
Babcock & Wilcox Co.
Chicago Bridge & Iron Co.
Rodney Hunt Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Pusey & Jones Corp.
Ross Engineering Corp., J. O.
Valley Iron Works Co.

REELS
The Appleton Machine Co.
Black Clawson Company
Dilts Machine Works (Kohler Systems)
Downingtown Mfg. Co.
Hudson Sharp Machine Co.
Moore & White Co.
Rodney Hunt Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
The Smith & Winchester Mfg. Co.

REFINERS
Appleton Machine Co.
Bahr Brothers Mfg. Co.
Bauer Brothers Co.
Dilts Machine Works
Gibbs-Brower Company, Inc.
Anton J. Haug
E. D. Jones & Sons Co.
Morden Machines Co.
Murray, D. J., Mfg. Co.
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Sutherland Refiner Corp.
Valley Iron Works

REGULATORS
American Paper Machy. & Engrg. Works, Inc.
Allis-Chalmers Mfg. Co.
Armstrong Machine Works
Bird Machine Company
DeZurik Shower Company
General Electric Co.
Johnson Corp.
Leeds & Northrup Company
National Technical Laboratories
Shartle Brothers Machine Co.
Stickle Steam Specialties Co.
Taylor Instrument Companies
Wallace & Tiernan

RESINS
American Cyanamid Company, Plastics & Resins Division
The Dow Chemical Company
The Goodyear Tire & Rubber Company
Hercules Powder Co.
Monsanto Chemical Company
Nopco Chemical Co.
Rohm & Haas Co., Resinous Products Div.

ROLLS
Appleton Machine Co.
Black Clawson Company
Dilts Machine Works
Downingtown Mfg. Co.
Frank W. Egan & Co.
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Lobdell Co.
The Moore & White Co.
D. J. Murray Mfg. Co.
Perkins, B. F., & Sons Co.
Pusey & Jones Corp.
J. J. Ross Company
Ross Paper Machy. Co.
Rodney Hunt Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
U. S. Rubber Co.
Valley Iron Works Co.
Waldron Corp., John

ROLL COVERS
The Goodyear Tire & Rubber Company
Stowe-Woodward, Inc.

ROLL HANDLING EQUIPMENT
Dilts Machine Works (Kohler Systems)

ROLL STANDS
Cameron Machine Co.
Dilts Machine Works (Kohler Systems)
Frank W. Egan & Co.
Moore & White Co.
Potdevin Machine Co.
John Waldron Corp.
H. G. Weber & Co., Inc.
The Sandy Hill Iron & Brass Works

ROPE CARRIERS
Black Clawson Co.
The Moore & White Co.
The Sandy Hill Iron & Brass Works

ROTARY STEAM JOINTS
Johnson Corp.
The Moore & White Co.
Shartle Bros. Mch. Co.

RUBBER PRODUCTS
The Goodyear Tire & Rubber Company

SATURANTS
American Anode Div.

SATURATING MACHINES
Dilts Machine Works
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Moore & White Co.
Potdevin Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John
Weber, Herman G.

SAVEALLS
Bird Machine Company
Chicago Bridge & Iron Co.
Green Bay Fdy. & Mch. Wks.
Hardinge Company

SCALES
Fairbanks, Morse & Co.
Merrick Scale Mfg. Co.
Testing Machines, Inc.

SCREEN PLATES
Bird Machine Company
Fitchburg Screen Plate Co.
Magnus Metal Corp.
Morey Paper Mill Supply Co.
Testing Machines, Inc.

SCREENS
Allis-Chalmers Mfg. Co.
Appleton Wire Works
Appleton Machine Company
Bird Machine Company
Carthage Machine Co.
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
E. D. Jones & Sons Co.
Link Belt Company

Moore & White Co.
D. J. Murray Mfg. Co.
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

SHEET MACHINES
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Valley Iron Works Co.

SHOWER PIPES
Bird Machine Company
DeZurik Shower Company
Downingtown Mfg. Co.
Moore & White Co.
Sandusky Fdy. & Mch. Co.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.

SHREDDERS
Bauer Brothers Co.
Carthage Machine Co.
Gibbs-Brower Company, Inc.

SIZING
American Cyanamid Company, Industrial Chemicals Division
The Dow Chemical Company
du Pont, E. I., de Nemours & Co.
Hercules Powder Co.
The Hubinger Co.
Monsanto Chemical Company
National Aluminate Corp.
Nopco Chemical Co.
Stein-Hall Co., Inc.
Wyandotte Chemicals Corp., Michigan Alkali Div.

SIZING TESTER
W. & L. E. Gurley
Testing Machines, Inc.
Thwing-Albert Instrument Co.

SLIME CONTROL
The Dow Chemical Company
E. I. du Pont de Nemours & Co.
General Dyestuff Corp.
Monsanto Chemical Co.
National Aluminate Corp.
Rohm & Haas Co.
Vanderbilt Co., R. T.
Wyandotte Chemicals Corp., Michigan Alkali Div.

SLITTERS
Black Clawson Company
Cameron Machine Co.
Carthage Machine Co.
Dietz Machine Works
Dilts Machine Works
Downingtown Mfg. Co.
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co., Inc.
Hamblet Machine Co.
Hudson Sharp Machine Co.
Langston Co., Samuel M.
Moore & White Co.
D. J. Murray Mfg. Co.
Potdevin Machine Co.
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Waldron Corp., John

SMOKE STACKS
Chicago Bridge & Iron Co.

SOFTNESS-STIFFNESS TESTER
W. & L. E. Gurley
Testing Machines, Inc.
Thwing-Albert Instrument Co.

SOLUBLE OILS
American Cyanamid Company, Industrial Chemicals Division
General Dyestuff Corp.
Nopco Chemical Co.

SPECIAL MACHINERY
Dilts Machine Works
The Sandy Hill Iron & Brass Works
John Waldron Corp.

SPLICING TISSUE
Bunge Pulp & Paper Co.
Williams-Gray Co.

STAINLESS STEEL
American Cast Iron Pipe Co.
Armco Steel Corp.
Michigan Steel Casting Co.
U. S. Steel Corp.

STARCH
A. M. Meincke & Son, Inc.
Clinton Foods, Inc.
The Hubinger Co.
National Starch Products Inc.
Stein-Hall Co., Inc.

STEAM JOINTS
The Moore & White Co.
Shartle Bros. Mch. Co.

STEAM SPECIALTIES
Babcock & Wilcox Co.
Combustion Engrg. Co., Inc.
Davis Engrg. Corp.
Johnson Corp.
Stickle Steam Specialties Co.

STEEL
Armco Steel Corp.
Carnegie Illinois Steel Co.
Lukens Steel Company
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
U. S. Steel Corp.

STEEL, CLAD
Babcock & Wilcox Co.
Lukens Steel Company

STEEL TANKS
Chicago Bridge & Iron Co.
The Sandy Hill Iron & Brass Works

STRETCH TESTER
Thwing-Albert Instrument Co.

STUFF CHESTS
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

SUCTION BOXES
Black Clawson Company
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

SULPHITE SPECIALTIES
Canadian Newsprint Supply Co.

SULPHUR
Texas Gulf Sulphur Co.

SULPHUR BURNERS
Valley Iron Works Co.

SULPHUR DIOXIDE
American Cyanamid Company, Calco Chemical Div.
Virginia Smelting Co.

SUPERCALENDERS
The Appleton Machine Co.
B. F. Perkins & Son, Inc.

SYNTHETIC LATICES
American Cyanamid Company Industrial Chemicals Division
American Anode Div.
The Goodyear Tire & Rubber Company
Nopco Chemical Co.

TAKE OFF UNITS
Dilts Machine Works (Kohler Systems)

TALC
American Cyanamid Company, Industrial Chemicals Division
Vanderbilt Co., R. T.

TANKS
Chicago Bridge & Iron Co.
Kalamazoo Tank & Silo Co.
B. F. Perkins & Sons, Inc.
J. O. Ross Engrg. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John

TEARING TESTERS
Thwing-Albert Instrument Co.
Testing Machines, Inc.

TENSILE TESTERS
Bunge Pulp & Paper Co.
Thwing-Albert Instrument Co.
B. F. Perkins & Son, Inc.
Testing Machines, Inc.
Nopco Chemical Co.

THICKENERS, DECKERS AND SAVEALLS
The Appleton Machine Co.
Bird Machine Company
Carthage Machine Co.
Chicago Bridge & Iron Co.
Dilts Machine Works
Dorr Co.
Downingtown Mfg. Co.
Hardinge Co., Inc.
Moore & White Co.
D. J. Murray Mfg. Co.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

TITANIUM
American Cyanamid Co., Calco Chemical Div.
E. I. du Pont de Nemours & Co.
Titanium Pigment Co.
R. T. Vanderbilt Co.

TOOLS
Walworth Company

TRACTORS AND TRUCKS
Towmotor Corp.

TRANSMISSIONS
Link Belt Company

TRAPS
Crane Co.
Johnson Corporation
Shartle Bros. Mch. Co.
Stickle Steam Specialties Co.

TUBES
Babcock & Wilcox Co.
National Tube Co.

TUBING MACHINES
Dilts Machine Works

TUBING, MECHANICAL
National Tube Co.

TUBS
Rodney Hunt Machine Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

TURBINES
Allis-Chalmers Mfg. Co.
De Laval Steam Turbine Co.
General Electric Company
Hunt, Rodney, Mach. Co.

UNWINDERS
Dilts Machine Works (Kohler Systems)
John Waldron Corp.

USED EQUIPMENT
Gibbs-Brower Co.
Thomas W. Hall Co.
J. J. Ross Company
Ross Paper Machy. Corp.
Shartle Brothers Machine Co.

VALVES
Crane Company
Dilts Machine Works
E. D. Jones & Sons Co.
Magnus Metal Corp.
D. J. Murray Mfg. Co.
William Powell Co.
Record Fdy. & Mch. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Stickle Steam Specialties Co.
Taylor Instrument Companies
Trimbey Mach. Wks.
Valley Iron Works Co.
Walworth Company

VORTRAPS
Nichols Engrg. & Research Corp.

WASHERS
Bird Machine Company
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
E. D. Jones & Sons Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Rodney Hunt Machine Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

WASTE TREATING, EQUIPMENT
The Dorr Company
Hungerford & Terry, Inc.

WATER CONDITIONING
Calgon, Inc.
The Dorr Company
General Dyestuff Corp.
Hungerford & Terry, Inc.
National Aluminate Corp.
The Permutit Company
The Sandy Hill Iron & Brass Works

WATER DISPERSIONS
American Anode, Inc.
American Cyanamid Company Industrial Chemicals Division
Rohm & Haas Co., Resinous Products Div.

WATER FILTERS
Green Bay Fdy. & Mch. Wks.
The Permutit Company

WATER FINISH EQUIPMENT
Dilts Machine Works

WATER PENETRATION TESTER
Thwing-Albert Instrument Co.

WATER SOFTENERS
The Dorr Company
Hungerford & Terry, Inc.
The Permutit Company
Wyandotte Chemicals Corp., Michigan Alkali Div.

WATER VAPOR CUPS
Thwing-Albert Instrument Co.

WAXES
Bunge Pulp & Paper Co.
National Wax Company

WAXING MACHINERY
Black Clawson Company
Dilts Machine Works
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
The Mayer Machine Co.
Potdevin Machine Co.
Shartle Brothers Machine Co.
Waldron Corp., John
Weber, Herman G.

WEB TENSION CONTROL
Dilts Machine Works (Kohler Systems)
John Waldron Corp.

WELDING EQUIPMENT
General Electric Company
Walworth Company

WET MACHINES
Black Clawson Company
Carthage Machine Co.
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Moore & White Co.
Pusey & Jones Company
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

WETTING AGENTS
American Cyanamid Company, Industrial Chemicals Division
General Dyestuff Corp.
Monsanto Chemical Company
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

WHITE WATER HEATERS, AUTOMATIC SELF CLEANING TYPE
Davis Engineering Corp.

WHITE WATER TREATING EQUIPT.
The Dorr Company
Hungerford & Terry, Inc.
The Permutit Company
The Sandy Hill Iron & Brass Works

WINDERS AND REWINDERS
The Appleton Machine Co.
Black Clawson Company
Cameron Machine Co.
Dietz Machine Works
Dilts Machine Works
Downingtown Mfg. Co.
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Hudson-Sharp Mach. Co.
Kohler Systems
Langston Co., Samuel M.
Moore & White Co.
Potdevin Machine Co.
Pusey & Jones Corp.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Smith & Winchester Mfg. Co.
Waldron Corp., John

WINDING ROLL CHANGERS
Dilts Machine Works (Kohler Systems)

WIRE BRUSHES
M. W. Jenkins Sons, Inc.

WIRES
Appleton Wire Works
International Wire Works
Lindsay Wire Weaving Co.
Williams-Gray Co.

WIRE BRUSHES
Williams-Gray Co.

WOOD SPLITTERS
The Appleton Machine Co.
Carthage Machine Co.

INDEX TO ADVERTISERS

A

Alexander Brothers — —
Allis-Chalmers — —
Amercoat Corporation — —
American Cyanamid Co., Calco Chemicals Division — —
American Cyanamid Co., Industrial Chemicals Division — —
American Drainage & Metal Products Inc. 55
American Leather Belting Assn. — —
American Paper Mchy. & Engrg. Wks. — —
Appleton Machine Co., The — —
Appleton Wire Works, Inc. — —
Appleton Woolen Mills 56
Armco Steel Corp. — —
Askania Regulator Co. — —
Asten-Hill Mfg. Co. — —

B

Babcock & Wilcox Co. — —
Bagley & Sewall Company — —
Bahr Bros. Mfg. Co. — —
Bailey Meter Company 4
Bauer Brothers Co., The — —
Beckman Instruments, Inc. 10
Bird Machine Company 13
Birk, F. Paul — —
Bixby, R. W., Inc. 48
Black-Clawson Company 6
Blaw-Knox Company 51
Bowsher, N. P., Company 56
Bridgeport Safety Emery Wheel Co. — —
Brown Company — —
Bulkley, Dunton Pulp Co. — —
Bunge Pulp & Paper Co. — —

C

Cambridge Instrument Co. — —
Cameron Machine Co. 59
Canadian Newsprint Supply Co. — —
Carthage Machine Co. 50
Chemipulp Process Inc. — —
Chicago Bridge & Iron Co. — —
Chiksan Company — —
Ciba Company — —
Classified Advertising 48
Cleveland Crane & Engrg. Co. — —
Clinton Foods, Inc. — —
Cochrane Corporation — —
Colledge, F. W. 45
Columbia Chem. — —
Combustion Engineering-Superheater, Inc. — —
Corn Products Sales Co. — —
Cowles Chemical Co. — —
Crane Company — —
Crucible Steel Co. of America — —
Curtator Corporation — —

D

Davis Engineering Corp. — —
Deitz Machine Works — —
De Laval Steam Turbine Co. — —
DeZurik Shower Co. — —
Dilts Machine Works 6
Dorr Company, The — —
Dow Chemical Company — —
Dow Corning Corp. — —
Downington Mfg. Co. 2
Draper Brothers Co. — —
duPont, E. I., de Nemours & Co., Electrochemical Dept. — —
duPont, E. I., de Nemours & Co., Dyestuffs Dept. — —
duPont, E. I., de Nemours & Co., Grasselli Chem. Dept. — —
duPont, E. I., de Nemours & Co., Polychemicals Dept. — —
Durkee Company, The — —

E

Ebasco Services, Inc. — —
Efficiency Engrg. Co. — —
Egan, Frank & Company — —
Elkman Paper Core Co. 41
English China Clays Sales Corp. 47

F

Fairbanks Morse & Co. — —
Farrel-Birmingham Co., Inc. — —
Ferguson, The H. K. Company 37
Ferro Enamel Corp. — —
Fitchburg Screen Plate Co. — —

G

Geigy Company — —
General Dyestuff Corp. — —
General Electric Company — —
Gibbs, Ralph E. — —
Gibbs-Brower Co. — —
Goodrich Chemical Company — —
Goodyear Tire & Rubber Co. — —
Goslin-Birmingham Mfg. Co. — —
Gotham Ink & Color Co. — —
Gottesman & Company Front Cover
Green Bay Fdy. & Wks. — —
Grinnell Company, Inc. — —
Guest, C. M., & Sons 56
Gurley, W. & L. E. — —

H

Hagan Corp., (Calgon, Inc.) — —
Hall, Thomas W., Co., Inc. 48
Hamblet Machine Co. 52
Hansson, Elof, Inc. — —
Hardinge Company, Inc. — —
Harris-Seybold Co. — —
Heppenstall Company — —
Hercules Powder Company — —
Heyden Chemical Co., Aktivin Div. — —
Hooker Electrochemical Co. — —
Huber, J. M., Corp. — —
Hubinger Company, The 50
Hudson Sharp Mfg. Co. — —
Hungerford & Terry, Inc. — —
Huyck, F. C., & Sons — —

I

Industrial Brownhoist — —
International Nickel Co. — —
International Wire Works — —

J

Jenkins, M. W., Sons, Inc. — —
Johnson Corporation, The — —
Johnson, Alvin H., & Co. — —
Jones, E. D., & Sons Co. 38

K

Kalamazoo Tank & Silo Co. — —
Kidder, Peabody & Co. 39
Kinsley Chemical Company 56
Knox Woolen Company 47

L

Langston, Samuel M., Co. 31
Lawton, C. A., Company — —
Leeds & Northrup Co. — —
Lindsay Wire Weaving Co. — —
Link Belt Company — —
Lobdell United Company — —
Lockport Felt Co. — —
Lodding Engineering Co. — —
Loeser, E. W., Company — —
Lukens Steel Company — —
Lyddon Company — —
Lynch Corporation — —

M

Magnus Metal Div., Nat. Lead Co. — —
Main, Charles T., Inc. 56
McBride, Edward J., Company 52
Mead Sales Company, The — —
Meincke, A. M., & Son — —
Meisel Press Mfg. Co. 46
Merrick Scale Company — —
Michigan Steel Casting Co. 56
Monsanto Chemical Company 15
Montague Machine Co. — —
Moore & Munger — —
Moore & White Co. 27
Moorhead Electrical Machinery Co. — —
Morden Machines Company — —
Morey Paper Mill Supply Co. — —
Morning, Nichol Inc. — —
Mount Hope Machinery Co. — —
Murray, D. J., Mfg. Co. — —

N

Nash Engineering Company — —
National Adhesives 3
National Aluminate Corp. — —
National Aniline Div., Allied Chem. & Dye Corp. — —
National Starch Products, Inc. — —
National Wax Company — —
Newport News Shipbuilding & Dry Dock Co. — —
Niagara Alkali Co. — —
Nichols Engrg. & Research Co. — —
Nopco Chemical Co. — —
Northern Engraving & Mch. Co. — —
Norton Company — —

O

O'Donoghue, Roderick — —

P

Paisley Products, Inc. — —
Paper & Industrial Appliances — —
Paper & Pulp Testing Laboratories — —
Parsons & Whittemore — —
Perkins, B. F., & Son Co. — —
Perkins-Goodwin Company 35
Permutit Company, The — —
Photovolt Corporation — —
Pittsburgh Plate Glass Co. — —
Putdevin Machine Co. 51
Powell, William, Company — —
Price & Pierce, Ltd. 47
Pulp & Paper Trading Co. — —
Pusey & Jones Corp., The 8

R

Raymond, Chas. P., Service, Inc. 48
Record Fdy. & Machine Co. — —
Red Ray Manufacturing Co., Inc. — —
Reichhold Chemicals, Inc. — —
Reliance Elec. & Engrg. Co. — —
Research Corporation — —
Restigouche Co., Ltd. — —
Rice Barton Research Corp. — —
Rogers, S. C., & Co. — —
Rohm & Haas Company — —
Roots-Connersville Blower Corp. — —
Ross, J. L., Company 49
Ross, T. O., Engrg. Corp. — —
Ross Paper Machinery Co. — —
Rust Engineering Co. 56

S

Sandusky Fdy. & Mch. Co. — —
Sandy Hill Iron & Brass Works — —
Shartle Brothers Machine Co. 6
Shuler & Benninghofen — —
Sinclair Refining Co. — —
Sirrine, J. E., Company — —
Smith & Winchester Mfg. Co. — —
Sconoy-Vacuum Oil Co., Inc. — —
Solvay Sales Div., Allied Chem. & Dye Corp. — —
Sonoco Products Company — —
Stebbins Engrg. & Mfg. Co. — —
Stein, Hall & Co., Inc. — —
Stickle Steam Specialties Co. 50
Sun Oil Company — —
Sutherland Refiner Corp. — —

T

Taylor Instrument Co.'s — —
Taylor Stiles & Co. 56
Testing Machines, Inc. — —
Texas Company, The — —
Texas Gulf Sulphur Co., Inc. — —
Thomas Flexible Coupling Co. 43
Thwing-Albert Instrument Co. — —
Tide Water Assoc. Oil Co. — —
Timken Roller Bearing Co. — —
Titanium Pigment Corp. — —
Towmotor Corporation 36

U

United Carbon Co., Inc. 54
U. S. Rubber Company — —
U. S. Steel Corp. 33

V

Valley Iron Works Co. — —
Vanderbilt, R. T., Co., Inc. — —
Virginia Smelting Company 53

W

Waldron, John, Corporation — —
Wallerstein Co., Inc. — —
Walworth Company Back Cover
Waterbury Felt Company — —
Waterbury, H., & Sons Co. — —
Weber, H. G., & Co., Inc. 54
Wellman Engineering Co. — —
Western Gear Works — —
Western Precipitation Corp. — —
Westinghouse Electric Corp. — —
West Va. Pulp & Paper Co. 47
Weyerhaeuser Timber Co. 17
Wheeler Roll Company — —
Whiting Corporation — —
Williams Apparatus Co. — —
Williams Gray Company — —
Wyandotte Chemicals Corp. 23

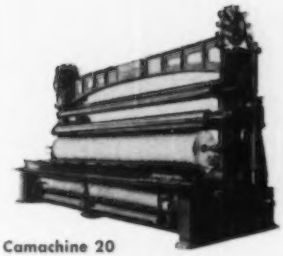
BUSINESS STAFF

Arthur E. Gordon, Business Mgr. — *Bruce E. Brown* — *H. K. Vinton* — *George H. Heitzeberg*
Frederick B. Grosse, Production Mgr. — *Franklyn H. Olsen*
15 West 47th Street, New York, 19, N. Y. PLaza 7-2370 — Room 1020, 79 West Monroe St., Chicago, 3, Ill. CEntral 6-2784

McDonald-Thompson Company

639 S. Wilton Place, Los Angeles, 5, Cal. DUnkirk 7-2590 — 625 Market St., San Francisco, 4, Cal. YUkon 6-0593
Terminal Sales Bldg., Seattle, 1, Wash. MAin 3860 — 115 SW Fourth Ave., Portland, 4, Ore. ATwater 7401
317 Railway Exchange Bldg., Denver, 2, Colo. MA 2733
Edward M. Buck, 4552 Rheims Place, Dallas 5, Texas
Justin 8-8278

New Camachines® are designed and built with the conviction that *all* users of roll products *prefer* the advantages of a quality roll. Certainly that is true of the pressman in the newspaper plant where independent tests have proved the superiority of *Camachine* newsprint rolls. It's also true of the electrician taping a hot wire. Or the accountant using an adding machine. Or the housewife using dozens of roll products in her daily chores. It makes no difference what roll product you make. When the right modern *Camachine* helps to improve your roll quality...



Camachine 20

World's fastest paper mill winder, produces top-quality rolls at speeds up to 5000 f.p.m. on newsprint. Features air-operated slitters. Widths from 180" to 300". Rewound diameters to 40" on paper, 60" on board. Write for the descriptive bulletin "Mile-a-Minute."

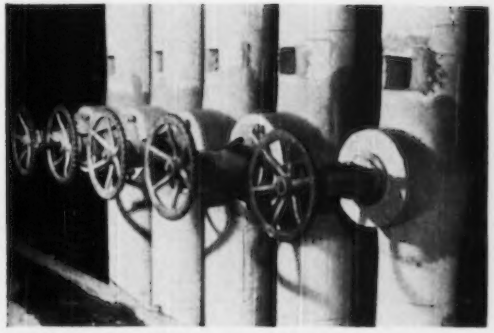
you can sell more!

Cameron Machine Company • 61 Poplar Street • Brooklyn 2, N. Y.

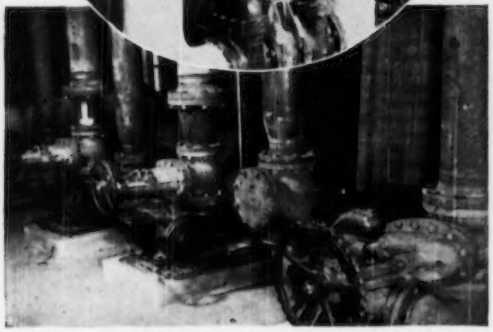
Camachine engineers will be pleased to consult with you on any roll production problem.

AA-225

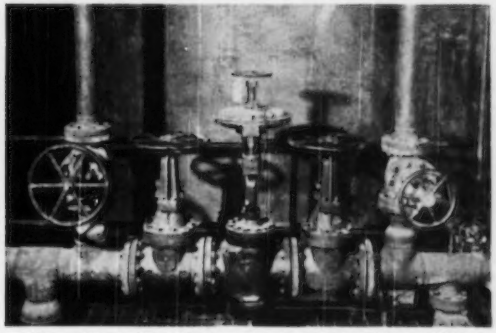
Walworth Iron Body Bronze Mounted Gate Valves (No. 726F) on steam line to paper machine.



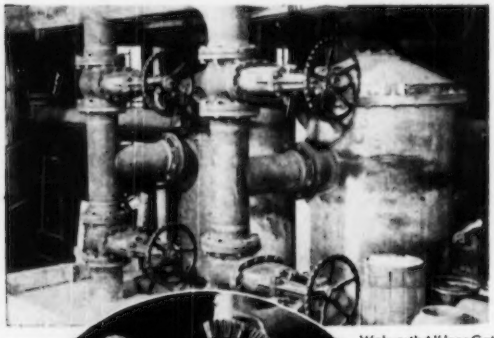
Walworth Series 900 Pressure-Seal Cast Steel Gate Valves with welding ends on main steam lines.



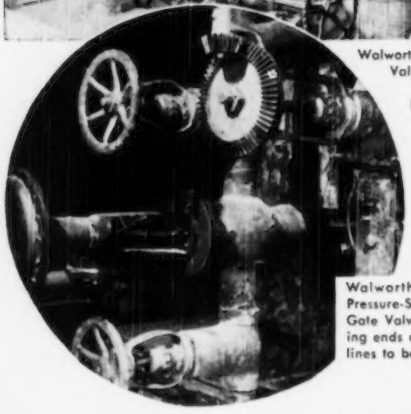
Walworth Special Alloy Pulp Mill Gate Valves (No. 725FS) and Check Valves (No. 928FS) on liquor lines.



Walworth Extra Heavy Steeliron Gate Valves (No. 786F) and Globe Valves (No. 955F) on pressure reducing lines.



Walworth All Iron Gate Valves (No. 727F) in weak black liquor service.



Walworth Series 900 Pressure-Seal Cast Steel Gate Valves with welding ends on feed water lines to boiler.

Valves for Pulp and Paper Mill Service

Valves play an important part in the efficient operation of any pulp or paper mill. For new construction, or for maintenance, pulp and paper mill engineers are choosing the right valve for each specific service from Walworth's complete line.

Walworth manufactures valves and pipe fittings of steel, steeliron, iron, bronze, and special alloys. Illustrated are Walworth valves of latest design, installed in a variety of services in a modern pulp and paper mill.

For further information and details of Walworth's complete line of valves and fittings, see your local Walworth distributor, or write for Catalog 47.

WALWORTH

Pulp and Paper Mill Division

60 EAST 42nd ST., NEW YORK 17, N. Y.

DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD